Walter Leal Filho
(eds.)

World Trends in Education for Sustainable Development

PETER LANG
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Preface

It is widely acknowledged that sustainable development is a long-term goal, which both individuals and institutions (and countries!) need to pursue. This important theme is characterized by an intrinsic complexity, since it encompasses ecological or environmental considerations on the one hand, and economic matters, social influences and political frameworks on the other. This makes provisions in respect of education for sustainable development a particularly challenging task, but one which is feasible and achievable, provided the right elements are put into place.

This book is an attempt to foster the cause of education for sustainable development, by documenting and disseminating experiences from different parts of the world, where learning for, about and through the principles of sustainability is taking place, in various sets and contexts, in both industrialized and developing nations.

Sustainable development is not only about education. It is also about agriculture, transport, energy, climate change, consumption. Therefore, if we ever want education for sustainable development to succeed, we need to take these wide-ranging issues into account. Moreover, education for sustainable development is not only a matter for teachers in formal education.

It is far more than that. Real education for sustainable development can be practiced every day, be it in making one aware of how much water one consumes when turning on the water tap to brush one’s teeth in the morning, or to question the use of private transport in cities where public transport is widely available. It can be applied when we choose to buy a product from the supermarket – instead of using the local weekly market – and when we switch off the lights in the office when we go home. Education for sustainable development is about education for sustainable living.

I would like to thank all authors for presenting their experience in their respective chapters, and their willingness to share their ideas. Much can be gained by providing a platform for the debate on education for sustainable development in a pragmatic way; by providing their inputs the authors have made a positive contribution towards a debate which needs to be present and reach a depth far beyond that which conferences, workshops or seminars may be able to offer.
A special feature of this book is that it not only presents a wide range of philosophies, approaches, methods and analyses with respect to education for sustainable development across the world, but also documents and disseminates concrete case studies, which show how education for sustainable development may be realized in practice. This book, which is volume 31 of the award-winning series “Environmental Education, Communication and Sustainability”, the world’s longest running book series on sustainability, is also a further means of support for the UN Decade on Education for Sustainable Development, addressing the perceived need for internationally-oriented, forward-looking publications, which aim to advance the cause of education for sustainable development and its ultimate goal: a better world.

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Chapter 1

Applied Sustainable Development: A Way Forward in Promoting Sustainable Development in Higher Education Institutions

Walter Leal Filho

Abstract

Purpose: Since the discussions on sustainable development are not new and there is at present a plethora of texts, declarations and resolutions paving the way for its further promotion, but with a limited degree of success, time is now ripe for the development of new approaches, methods and means to further the cause of sustainability in a higher education context, without being trapped in conceptual debates.

Design/Methodology/Approach: By means of an in-depth description of the concept of applied sustainability, and examples of a set of projects surrounding matters related to sustainable development, the paper shows how this can be achieved.

Findings: The paper illustrates how much higher education institutions can achieve by pursuing applied sustainable development initiatives.

Originality/value: This paper presents the principle of “applied sustainable development”, an action-oriented and practice-based approach, where principles of sustainable development are put into practice, leading to concrete outputs and tangible results.

Introduction: a brief overview of the evolution of the sustainability debate

Even though the origins of the term “sustainable development” or “sustainability” go back many decades and both terms have been used on an ad hoc basis, public perception about – and the international visibility of – sustainable development was substantially enhanced with the publication of “Our Common Future”, also
known as the “Brundtland Report” (WCED 1987). This publication reported on the deliberations of the World Commission on Environment and Development (WCED), which was a body set up by the United Nations a few years earlier under the Chairmanship of Mrs Gro H. Brundtland (who at the time was Norway’s Prime Minister), with the mandate of investigating the links between environmental protection (a term which was already well-established) and development, and to suggest ways to combine both.

Subsequent to the publication of “Our Common Future” back in 1987, the United Nation’s General Assembly voted to run the UN Conference on Environment and Development (UNCED), under the chairmanship of Maurice Strong, a Canadian industrialist. The event was to be held in Rio de Janeiro, Brazil, in June 1992.

There is no doubt in relation to the fact that since “Our Common Future”, sustainability has found its way through the UN system, government agencies, through enterprises and through institutions of higher education across the world. More importantly, the more modern views of sustainable development pledged by “Our Common Future” are not limited to ecological considerations. Rather, they have been – and are now – paying due attention to the economic, social and political variables which influence the process.

If one takes a step back to gain an overall view of the past trends, one can see that the conceptual evolution of sustainability has gone through three main phases:

**Phase 1 (1987-1997):** in this initial phase, under the influence of WCED, sustainable development was mostly regarded as a matter of concern to nations, as advocated by Agenda 21 (UN 1992) and as agreed by the Heads of States who attended the UNCED, held in Rio de Janeiro in June 1992.

**Phase 2 (1998-2002):** in this second phase, there was a noticeable change in the general perception of sustainable development, which has evolved from being something countries should be engaged with, towards a matter of concern to individuals and institutions. In phase 2, the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 (also called Rio+10), it was seen that comparatively little progress had been made since UNCED held ten years earlier, and that many of the commitments and pledges made by many governments at UNCED, were yet to be realized.

**Phase 3 (2003 to date):** the current phase has been characterized by a new dynamic in the general perception of what sustainability is, with a wide assumption that not only governments, but also individuals, institutions and even businesses – which until
then had been largely excluded – need to commit towards sustainability. The fact that the United Nations declared the period 2005-2014 as the UN Decade of Education for Sustainable Development (UNDESD) has provided some further impetus, albeit not to the extent that was originally expected. The forthcoming Rio+20 conference, to be held in Rio in 2012, will be likely to provide additional momentum to the current state of affairs and hopefully start a new phase, with a greater perception of what sustainability is, what it means and what it can achieve.

In terms of the higher education sector, the evolution of the debate on sustainable development over the past 15 years as a whole, and the discussion on sustainability at universities and colleges in particular, has been fairly well documented (e.g. Leal Filho 1998, 1999a, 1996b, 2010a, 2010b). This documentation has also covered areas such as sustainability in the curriculum (Creighton 1996; Svanström et al. 2008), in planning (Blowers 1993) or the broad field of policy (e.g. Selman 1996; Baker, Kansis, Richardson and Young 1997; Brown 1997). Over the past five years, much progress has also been seen and the achievements reached in respect of sustainability (Singh et al. 2009), and sustainability science (e.g. Kates et al. 2001), are visible.

Progress has also been seen in terms of the greening of the curriculum (Jabbour 2010; Lourdel et al. 2005; Marshall and Harry 2006), in respect of environmental performance (Jiménez and Lorente 2001), and at the institutional level (e.g. Lozano-García, Huisingsh and Delgado-Fabián 2009).

Within the tertiary sector, there have been various landmarks in respect of the design of approaches and mechanisms to bring sustainability closer to higher education (Leal Filho 2010a). As stated by Leal Filho (2010b), this process has included the preparation of many important documents such as:

- The Magna Charta of European Universities (1988),
- The Talloires Declaration of University Presidents for a Sustainable Future (1990),
- The “Urgent Appeal from the CRE” to the Preparatory Committee of UNCED (1991),
- The COPERNICUS “Universities Charter or Sustainable Development” (1994),
• The Lüneburg Declaration on Higher Education for Sustainable Development (2001),
• The Ubuntu Declaration on Education and Science and Technology for Sustainable Development (2002),
• Graz Declaration on Committing Universities to Sustainable Development (2005),
• G8 University Summit Sapporo Sustainability Declaration (2008),
• G8 University Summit: Statement of Action (2010).

With a few exceptions, such as the Ubuntu Declaration which has been pursued by a number of organisations since Johannesburg, the majority of the declarations, agreements and action plans have one thing in common: they have never been fully implemented. This is not a criticism of the process leading to their preparation, but of the failure to ensure their implementation. The experience from these agreements shows that it makes little sense to have a group of people agreeing on sets of procedures and actions, without having the means to ensure their implementation. Perhaps part of the problem lies in the fact that even though convincing examples which show the usefulness of a sustainability focus in higher education institutions exist, and are available, they have not been documented and disseminated as they should have been. As a result, there is now a certain degree of skepticism with respect to the preparation of new declarations or action plans, since the experiences from the past are not particularly positive.

Moreover, despite the various actions taken at international level, much has still to be done at the regional and local levels. Indeed, 24 years after “Our Common Future” was published, nearly 20 years after “Agenda 21” was produced and 10 years after the world’s commitment towards sustainability was reiterated in the “Johannesburg Declaration”, the need for disseminating approaches, methods, projects and initiatives aimed at fostering the cause of sustainable development is as pressing as ever before.

**Defining applied sustainability**

The experiences from the past show that new and innovative ways are needed to foster the cause of sustainable development at higher education institutions in a more concrete and, hence, in a more meaningful way. This is not to say that the future debate on sustainability needs to be “atheoretical”. A sound theoretical basis for sustainability is and will remain valuable, and is a pre-condition for the successful implementation of sustainability programmes. Having said that, there is a perceived need for a new, fresh look at the ways we handle sustainable de-
velopment at universities, since the time spent exclusively on discussions on definitions or conceptual elements without a focus on the “how” is likely to be wasted. It makes little sense to dwell further on issues which have been repeatedly discussed and debated over years, and far more sense to look ahead and explore other means for the successful implementation of sustainability issues in higher education institutions.

This paper therefore puts forward the concept of applied sustainability, which can be defined as:

“An action-oriented and project-based approach, which use principles of sustainable development and applies them to real contexts and to real situations, yielding the benefits which can be expected when methods, approaches, processes and principles of sustainable development are put into practice.”

Applied sustainability differs from conventional approaches to the promotion of sustainable development in three main ways. Firstly, it is a practice-based approach, which bears the long history of sustainability and its principles in mind, but which is also concerned with its applications in real situations. Secondly, applied sustainability uses the body of theoretical studies and discourses available, but ensures they are put to use in specific, well defined contexts. Finally, applied sustainability is concerned with measurable, tangible results and not only with subjective issues such as raising awareness or consciousness, even though these elements are certainly part of the formula. Table 1 illustrates some of the many advantages of applied sustainability, as opposed to conventional approaches towards handling sustainable development, as largely seen today.

**Table 1: Advantages of applied sustainability**

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<th>Applied sustainability</th>
<th>Conventional approaches</th>
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<td>Action oriented</td>
<td>Theory biased</td>
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<tr>
<td>Emphasis on projects and practical experiences</td>
<td>Emphasis on discourses, general principles and epistemological considerations</td>
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<td>Clearly defined objectives</td>
<td>Generally formulated goals</td>
</tr>
<tr>
<td>Defined schedule and timetable</td>
<td>Undefined time scales</td>
</tr>
<tr>
<td>Expected outputs listed</td>
<td>No clear outputs defined</td>
</tr>
<tr>
<td>Precise financial basis</td>
<td>No specific financial considerations</td>
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<tr>
<td>Well defined topics</td>
<td>No topic definition or specific thematic focus</td>
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On the basis of the clear advantages offered by applied sustainability, the author defends the view that the application of applied sustainability can (and should) provide a badly needed impulse for the further development of sustainable de-
velopment, in both higher education institutions and beyond. This view is based on two main elements:

1. The theoretical debate on sustainable development tends to be repetitive, reusing old arguments and defending well-known positions, which do not really move it forward.
2. The main barriers to the wide dissemination of sustainability, be it lack of resources, lack of training, lack of time and – sometimes – lack of interest, are as significant as they were 25 years ago. It is unlikely they will ever be overcome by the current, “business as usual” model.

The strategic advantages of applied sustainability are:

- Its flexibility, since it offers a potential for wide use under various circumstances and with a variety of groups and audiences,
- Its structure, which caters for outcome-based results, which are measurable and achievable,
- It allows and encourages engagement in pursuing the targets set,
- It caters for a constant monitoring and assessment of the extent to which the expected outputs and results have been achieved, allowing timely action whenever this is not the case.

Operationally, the fundament for the implementation of “applied sustainable development”, as a new way of thinking and as a new approach towards fostering the cause of sustainable development, is relatively easy: it requires good – however simple – and innovative ideas, which can be implemented by means of projects. A project approach here is vital, since it allows a clear overview of the tasks to be done, within a given time schedule, with clearly established outputs and a clear indication of the costs. The latter is probably one of the greatest problems encountered by sustainability efforts in higher education institutions: the limited (or lack of?) ability to quantify real costs and to properly budget initiatives in a way that ensures the financial resources needed to perform the work envisaged are available.

**Applied Sustainability: examples from projects**

Having defined and outlined the scope of applied sustainable development, it is important to provide clear indications of how it may work under real conditions. In order to provide a clear view of the feasibility of applied sustainability, this section presents a number of initiatives undertaken by the Research and Transfer Centre “Applications of Life Sciences” (FTZ-ALS) at the Hamburg University of Applied Sciences in Hamburg, Germany.
Since its foundation in August 2007, the FTZ-ALS has been a world-class provider of information, education and training on matters related to sustainable development. The title of the Centre, which reflects its orientation to the life sciences field, is intended to outline its practice-oriented basis. The FTZ-ALS is a living laboratory, where many innovative and ground-breaking ideas related to sustainable development are tested and implemented. Some of these ideas have been:

a) The creation of the world’s longest running book series on sustainability, titled “Environmental Education, Communication and Sustainable Development” with Peter Lang Scientific Publishers. With over 30 volumes, this series has produced ground-breaking books such as “Sustainability and University Life”, “Handbook of Sustainability Research” or “Communicating Sustainability”, among many others. Over 300 authors from all over the world have contributed to it.

b) The creation of the International Journal of Sustainable Development in Higher Education, the world’s only journal focusing on sustainable development in institutions of higher education. Since its foundation in the year 2000, IJSHE has made its way through rankings and is a top journal in the field.

c) The creation of the first “World Sustainable Development Teach-In Day” (the second one is planned for 2012), the aims of which are:
  - To disseminate information on the concept, aims and purposes of sustainable development in a way that allows a broad understanding of the concept, including elements related to its environmental, social, economic and policy aspects,
  - To raise awareness among university students of the complexity of matters related to sustainable development and the need for personal engagement and action,
  - To provide an opportunity to introduce projects and other sustainable development initiatives being undertaken at the international but also at the regional and local level by schools, universities, government bodies, NGOs and other stakeholders,
  - To discuss the problems, barriers, challenges, and chances and potentials related to implementing sustainable development, globally but also at the regional and local levels.

Last but not least, the “World Sustainable Development Teach-In Day” was intended to encourage more networking and information exchange among participants and hopefully catalyze cooperation initiatives and possibly new projects.

A further achievement of FTZ-ALS, which has a project portfolio in excess of US$ 15 million – making it one of the largest sustainability centers in the world – and over a dozen PhD students, is the organization and/or co-organization of a
number of sustainability events across Europe and in other parts of the world, making participants more deeply aware of the complexity of matters related to sustainable development, and the need to foster greater knowledge and skills among various groups in society.

Some of the projects undertaken by FTZ-ALS which are examples of applied sustainability are as follows.

Project 1: INSPIRE

The EU-project “Inspire School Education by Non-formal Learning” (INSPIRE) was prepared to foster information and learning on renewable energy and climate change. The vision of the project INSPIRE is to improve the quality and attractiveness of in-service teacher training by using extracurricular contexts and new learning places. INSPIRE was a project funded by the European Commission’s Lifelong Learning Programme (2007) by means of the COMENIUS Multilateral Projects budget line. The project’s initial period was from November 2007 to October 2009. The main objective of the INSPIRE project was to create synergies and links between out-of-school places of learning and curricular learning, thus improving the knowledge base of European pupils on matters related to education for sustainable development. In addition, it aimed at preparing a set of materials to support teacher training on renewable energy and climate issues, as well as to test such materials with a view to subsequent use in support of sustainability education.

INSPIRE’s goals were therefore very much in line with the objectives of the UN Decade of Education for Sustainable Development. The project partnership in Germany, Latvia and Poland developed approaches, methods and materials which may be used in other countries in Europe and beyond. The results achieved with INSPIRE were as follows:

- 4 Project reports,
- Documentation and dissemination of the results of literature study and expert interviews,
- A list of out-of-school learning places and best practice examples,
- Manuals and lecture notes for training courses to be used by teachers,
- A manual for the project partners,
Figure 1 provides a view of INSPIRE’s home page.

Figure 1: INSPIRE’s home page

Ultimately, the project whose focus was on renewable energy and climate matters, demonstrated how to optimize non-formal learning processes on environmental and sustainable development issues, hence contributing to the goals of the “United Nations Decade of Education for Sustainable Development”.

Project 2: JELARE

Renewable Energy is of great relevance for the socioeconomic development of all countries, including those in Latin America and in Europe, as both regions to date heavily depend on (imported) fossil fuels to meet their energy needs. Apart from the environmental benefits, the local generation and use of renewable energy offers a great potential for local economic development (e.g. a wide range of local job opportunities from high-skill to low skill, from high-tech to agriculture), fosters local investments and reduces the need for energy import. However, the renewable energy sector cannot develop appropriately, partly due to lack of expertise, especially in poorer countries such as Bolivia and Guatemala. Due to the innovative nature of this field, higher education institutions are very important actors in this sector, especially in terms of research but also with respect to the education of future employees. However, despite the value of the topic renewable energy, it is not as yet prominently featured in the curriculum of Latin American universities (or EU universities) as it could have been or, indeed, as it should be. This was
the reason for the initiation of the JELARE project which serves as an example of applied sustainability, focusing on renewable energy, one of the key issues of modern times.

Figure 2 provides an overview of the advantages of an applied sustainability approach in the field of renewable energy, with principles which may also apply to other areas.

Figure 2: Advantages of an applied sustainability approach in renewable energy

By means of a reality-based approach, JELARE can contribute towards the inclusion of the renewable energy issue in the curriculum of universities in Europe and Latin America, ensuring that this important aspect of sustainable development is duly considered.

Project 3: RECO Baltic 21 Net

One of the major challenges to sustainable development is how to handle waste in an appropriate way. The ever-growing waste production damages the environment and puts pressure on ecosystems. Yet, much can be gained by finding ways of using wastes intelligently, i.e. exploring their use as sources of energy or reusing materials in order to achieve environmental improvements and use the many business opportunities available.

The project RECO Baltic 21 Net, funded by the Interreg IVB (Baltic Sea) program, is aimed at addressing the shortage of knowledge, the lack of expertise and institutional capacity to handle waste management in the Baltic Sea region by
linking concepts of waste management with investments and spatial planning. The project’s home page is shown in Figure 3.

**Figure 3:** Home page of the RECO Baltic 21 Net project

The project partners are:

- Hamburg University of Applied Sciences (Germany),
- IVL Swedish Environmental Research Institute (Sweden),
- Sustainable Business Hub (Sweden),
- Kaunas University of Technology (Lithuania),
- Siauliai Region Waste Management Centre (Lithuania),
- Alytus Region Waste Management Centre (Lithuania),
- Belarussian Association of Environmental Management (Belarus),
- Waste Management Association of Latvia (Latvia),
- North Vidzeme Waste Management Organization Ltd. (Latvia),
- Ogre Municipality (Latvia),
- Consell Comarcal Del Maresme (Spain),
- Universita of Gdansk (Poland),
- Estonian Regional and Local Development Agency (Estonia),
- Estonian Institute for Sustainable Development (Estonia).

The project entails the design of recovery methods and the drawing up of investment models for sustainable implementation.
Project 4: DIREKT

A further applied sustainable development project led by FTZ-ALS is the “Small Developing Island Renewable Energy Knowledge and Technology Transfer Network” (DIREKT). The project is a cooperation scheme involving universities from Germany, Fiji, Mauritius, Barbados and Trinidad & Tobago with the aim of strengthening the science and technology capacity in the field of renewable energy of a sample of ACP (Africa, Caribbean, Pacific) small island developing states, by means of technology transfer, information exchange and networking. Developing countries are especially vulnerable to problems associated with climate change and much can be gained by raising their capacity in the key area of renewable energy. The aims of DIREKT, the home page of which is shown in Figure 4, are:

a) to strengthen the internal science and technology capacity in the field of sustainable development as a whole, and renewable energy in particular, in Small Developing Island States,

b) to foster co-operation in the field of sustainable development between the science and technology community with ACP and the EU and within Small Developing Island States,

c) to contribute to the transfer of research results of the key topic of renewable energies and hence assist with the implementation of technology transfer centers.
DIREKT will not only increase the capacity and improve the quality of research within the scientific and technology community of Small Developing Island States on matters related to sustainable development, but also establish and develop a market-oriented research framework to better capitalize and disseminate research.

**Project 5: WATERPRAXIS**

Eutrophication caused by nutrient loads is one of the biggest environmental problems of the Baltic Sea. Practical measures to restrict it are included in River Basin Management Plans (RBMPs) which result from the implementation of the EU Water Framework Directive. However, putting general-level RBMPs into practice is hindered by many barriers. For example, RBMPs cover large geographical areas. Thus, it is difficult to apply public participation principles to planning processes and gain common acceptance at local levels for the realization of the necessary measures.

The project “Waterpraxis – From theory and plans to eco-efficient and sustainable practices to improve the status of the Baltic Sea” funded by the Interreg IVB (Baltic Sea) program, is a partnership which covers 7 coastal countries of the Baltic Sea, namely Finland, Germany, Denmark, Poland, Lithuania, Sweden and Latvia. The project’s home page is shown in Figure 5.

Figure 5: Home page of the WATERPRAXIS project

The project’s overall objective is to improve the status of the Baltic Sea by contributing to the practical implementation of measures chosen in River Basin Management Plans (RBMPs) in the region. The specific objectives of the project are to iden-
tify and suggest improvements to current sustainable water management practices by analyzing the contents and planning processes of RBMPs; to establish action plans based on RBMPs for pilot areas representing best practices and measures for water protection and public participation; to prepare investment plans (incl. technical and financing plans) for water protection measures for selected sites in Poland, Lithuania, Denmark and Finland; to disseminate information on best practices and measures of water management via publications, seminars and websites and offer training and education programs for planners in the water management sector.

Project 6- REGSA

One of the major challenges to sustainable development is poverty reduction, very much in line with the UN Millenium Development Goals. There is a pressing need to alleviate poverty, and at the same time find ways to improve the quality of life in poor communities. Against this background, the project REGSA (Promoting Renewable Electricity Generation in South America) involving Germany (coordinator), Bolivia, Brazil and Chile, was conceived by FTZ-ALS. It aims at contributing to the increase of the use of electrical energy, obtained by means of renewable energy generation in South America, as a way to improve the environmental conditions, enhance the energy security and alleviate the poverty of the project areas. The home page of REGSA is shown in Figure 6.

Figure 6: Home page of the REGSA project

Furthermore, REGSA directly supports sustainable energy options in the partner countries. To achieve this goal new electricity grids are planned which will inte-
egrate the use of renewables as a source of electrical energy. These grids are to be
developed in rural areas in particular. In addition, extensive baseline studies will
be carried out, as will scenario building with regards to renewable electricity
generation, which will include political, technological and socioeconomic as-
perts. Different awareness-raising activities and practical support will be given
to further planning and design of policy frameworks. Furthermore, feasibility
studies of infrastructure projects are planned, which will eventually lead to an
increased use of clean energy technologies. Finally, REGSA will give direct
support via a feasibility study involving three pilot communities, facilitating
regional dialogue and capacity building which can subsequently be used as best
practice models for other regions in South America.

Project 7: CELA

Latin America is not only a region experiencing the degradation of many important
ecosystems, and where the quest for sustainable development is particularly impor-
tant, but it also among the most vulnerable regions in the world in respect of the
impacts of climate variation, climate change and extreme events. The ALFA III
Project “Network of Climate Change Technology Transfer Centres in Europe and
Latin America” (CELA – http://www.cela-project.net/) was initiated by FTZ-ALS
in order to investigate the extent to which vulnerability and risks are present in Latin
America, and at the same time introduce and disseminate experiences on adaptation
to climate change in the region. CELA is a project which promotes joint research
collaboration and exchanges of experiences between universities in Europe and
Latin America in the field of climate change, and aims to:

a) improve the quality of research and technology transfer in the field of climate
change in Latin American universities,
b) strengthen the role of higher education institutions in Latin America in sus-
tainable socio-economic development by bearing in mind the socio-economic
impacts of climate change,
c) foster research and technology transfer cooperation in the field of climate
change between higher education institutions in Latin America and Europe.

The rationale behind the project is the fact that mitigation of, and adaptation to,
climate change are of vital importance for the sustainable socio-economic develop-
ment of Latin America. The CELA project partners are:

• HAW Hamburg (Coordination), Germany,
• Catholic University of Bolivia, Bolivia,
• Galileo University, Guatemala,
• Association of Commercial Sciences University, Nicaragua,
• Catholic University of Perú, Peru,
• Tallinn University of Technology, Estonia.

The home page of CELA is shown in Figure 7.

Figure 7: CELA’s home page

By undertaking a project which specifically focuses on the networking and technology transfer in the field of climate change between the two regions, it is expected not only that synergies will be achieved, but also that access to available technologies will be facilitated.

Project 8: CALES A

The impacts of climate change on agriculture in Africa are significant and call for concrete measures which allow a better understanding of these problems, as well as the identification of sustainable means to address them. One of these means is the use of analogue locations, i.e. locations that have today the climatic characteristics that are expected tomorrow.

Based on the need to investigate this issue and offer realistic sustainability-based options, the project “Developing promising strategies using analogue locations in eastern and southern Africa” (CALES A) was initiated. The project is coordinated by the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), funded by the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) on behalf of the
German Ministry of Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, BMZ). HAW Hamburg is the European partner and provides assistance with the training elements, in particular the guidance of PhD students working on the project, as well as with its promotion and dissemination. CALESA’s home page is depicted in Figure 8. The other project cooperation partners are:

- Kenya Meteorological Dept (KMD), Kenya,
- Kenya Agricultural Research Institute (KARI), Kenya,
- Midlands State University (MSU), Zimbabwe,
- Zimbabwe Meteorological Department (ZMD), Zimbabwe.

Figure 8: CALESA’s home page

CALESA is also supported by the International Climate Change Information Programme (ICCIP), which assists with the dissemination elements. The aim of CALESA, which runs until the end of 2013, is to improve the ability of rainfed farmers in the semi-arid tropics of Africa to adapt to progressive climate change through crop, soil and water management innovations and appropriate crop genotype choices.

CALESA is not only a prime example of applied sustainability, but is also an example of a “research-for-development project”, which integrates climate risk analyses, crop growth simulation modeling, field-based research both on-station and in farmers’ fields and involves participatory research with farmers to assess their perceptions of current and future climate risk and their preferred climate
change adaptation strategies. It comprises research-oriented activities for knowledge and technology creation, and development-oriented activities for information sharing and capacity building. Bearing in mind that rainfed agriculture is vital for food security and yet stagnating in sub-Saharan Africa, and that current and future climate-induced risk poses an added constraint to adoption of innovation, the CALESA project will provide a concrete contribution towards alleviating the impacts of climate change and how this can be addressed vis-à-vis a sustainable agricultural development, which takes into consideration the needs of the poor and vulnerable.

Conclusions

As this paper has tried to demonstrate, much can be gained by using an applied dimension to sustainability as a whole and in education for sustainable development in particular. This is not to say that current approaches are not efficient (even though many of them are not!), but the message is that applied sustainability as a method, a strategy and as a way of thinking, allows a better understanding of the implications of sustainability principles, and smoother implementation of them into practice.

The examples outlined in this paper show how much can be achieved by adopting a pragmatic approach, as defended by applied sustainability, via which the various inconsistencies and ambivalences seen in connecting the theory and practice of sustainability – which have been common in the past – may be avoided. Applied sustainability can not only foster sustainability learning in specific contexts, but also guide future decisions where social, economic and ecological aspects may come hand in hand.

References


