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Pilot Study:

“Indicators of an Education for Sustainable Development”

English Summary

Foreword

The Austrian education system and its actors are today increasingly confronted with national and international strategies targeting Education for Sustainable Development (ESD). Accompanying the growing effort to open school classrooms, lecture halls and other learning spaces to the themes and methodologies of sustainability is an equally growing need for evaluation instruments with which to assess the quality and effectiveness of ESD processes: For not only must sustainability goals be achieved and adapted to changing realities, but a means of comparing the processes that underlie these efforts must also be set in place. This holds especially true because there remains much to be learned about how best to integrate and firmly anchor the new ESD paradigm within both the education system and society at large.

An obvious initial response would be the traditional approach of applying indicators, or, more specifically, specially dedicated ESD indicators. However, the open and dynamic character of Education for Sustainable Development presents all of us who learned to measure, monitor and generally trust in the “elegance” of precise indicators with a major challenge: Namely, how does one characterize the many qualitative and dynamic aspects of ESD, and, for that matter, can these aspects even be expressed in definite terms – i.e., using quantitative figures? To approach this question, it is necessary to let go of our desire to depict precise quantities and numbers, and instead arrive at a more general orientation and critical reflection with respect to education and learning processes.

Given these background considerations, our Pilot Study set out to present an initial overview of ESD indicators, at the same time exploring the question of which already existing education and sustainability indicators appear suitable for tackling the complexity of ESD processes. The scope of this undertaking was purposely limited in two key regards: Firstly, the study’s superordinate goal is not to present a complete and up-to-date indicator “database,” the main intent being instead to provide an initial impulse toward the establishment of an international “learning community” to further investigate ESD indicators. Secondly, due to budget considerations, our study is limited in focus to the higher education sector.

Equally important to point out is our (the authors’) particular approach to ESD indicators, with the fundamental assumption being that ESD indicators do not reflect a static or fixed system. Instead, they form the cornerstone of dynamic and open learning and improvement processes to be used by a broad user spectrum and thus support the goals of self-evaluation, dissemination, implementation and, ultimately, societal acceptance of ESD.

Of course, the use of ESD indicators will not let us escape the challenge of actively advancing Education for a Sustainable Development in the future, to include the integration of ESD as a new, central paradigm within the education system and society at large. It must also be said that indicator systems in and of themselves have limited expressive power within the context of ESD. As a result, they must always be viewed within an overall systemic context that reflects the interaction between individual system elements and its actors – who, after all, constitute the evaluation process. And, it is precisely this “imposed” dependence on a systemic and

contextual approach that will support systemic learning and critical reflection already during the development stage of ESD indicators.

The potential of ESD indicator sets thus lies not only in the orientation, dissemination and (self-)evaluation of education processes within the context of sustainability: For, ultimately, the development, use and continuous reworking of such indicator sets also helps initiate new learning processes which themselves exhibit central characteristics of ESD.

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PS: The present English summary contains primarily the key data and conclusions of the completed Pilot Study, with a strong focus placed on the sub-area of ESD indicators at the higher education level. The full version of the Pilot Study (in German) can be downloaded at: www.umweltbildung.at >Publikationen.

1 Framework and Goals of the Pilot Study

The Pilot Study was commissioned by Elisabeth Gehrler, the Austrian Minister of Education, Science and Culture, for the express purpose of:

- ⇒ ascertaining the state of research into, as well as application of, indicators used for Education for Sustainable Development in the German and English-speaking higher education sectors, and
- ⇒ to create a design blueprint for an international research and development project in the German-speaking countries that will develop and test indicators of an Education for Sustained Development, with special consideration given to the higher education sector.

The main goals of the Pilot Study are thus to achieve an optimum “position” for this future research and development project and to conceptually prepare it.

To meet these goals, the first portion of the study presents an overview of the state of development of indicators in the field of ESD, including an evaluation of existing indicators having relevance to ESD. Because few indicators dedicated specifically to ESD as yet exist, our analysis also extends to indicators stemming from the separate fields of education and sustainability, as well as pertinent evaluation and quality assurance approaches, as far as these bear relevance to ESD.

Based on the inventory conducted in part one, the second portion of the study was used to screen the indicators and subject them to a brief analysis, in order to sketch the existing trends in ESD indicator development.

Based on our findings, we proceed to make recommendations for a research project dedicated to the development of ESD indicators, and these are presented in Chapter 11 of the study.

While the core approach of such future research project will be based on investigation relying on secondary analysis, this research avenue will be supplemented by including testimony from renowned experts. The latter will help identify and relate the potential needs and expectations with respect to ESD indicator development, as well as providing a forum for past experience, to ensure that these vital elements are taken into consideration for the project recommendations.

Thus, the Pilot Study in no way attempts to define a suitable ESD indicator set, the goal is much rather to prepare the path for such a set to be developed. Despite the narrow and highly specialized approach used, the study grew to be rather comprehensive. For this reason, the writing style was kept as succinct as possible, with references to further resources provided where necessary.

2 Methodology

Two separate analytical paths are available for the development of ESD indicators. The first is to proceed “deductively” by either developing ESD concepts or relying on existing ones for an analysis, and then operationalizing and “indicatorizing” these concepts. The second option is to work “inductively” using existing indicators, particularly from the separate fields of education and sustainability, and to examine these for their suitability as ESD indicators.

This form of analytical separation offers two different focal points and approaches, with a circular model consisting of deductive analysis, inductive gathering of data and renewed conceptual testing (possibly including several rounds) best approximating practice in the field.

A primarily inductive approach was chosen to gather indicators for the Pilot Study. As a result, the first step was to identify the already existing ESD indicators (usually in the form of sets). However, because existing initiatives that specifically target Education for Sustainable Development are generally still in the early developmental stage, we chose to also examine indicators used in the fields of education and sustainability as part of the study. This choice rests on the fundamental hypothesis that the “intersection” of existing education and sustainability indicators may likely reveal certain ones to be suitable for use as ESD indicators, and that these need to be investigated further.

The working hypotheses behind this inductive approach can be summarized as follows:

1. It is possible that a sufficient number of indicators demonstrating suitability as ESD indicators – either in their current form or slightly modified to suit ESD – already exist.

2. Existing indicators are easier to communicate and more readily accessible to others.
3. As a general rule, the required data is already available and of sufficient quality.

To develop new indicators and ensure that they are commensurable and comparable (i.e., capable of being commonly measured and compared) requires considerable time and resources. For reasons of efficiency and economy, it thus made sense to first investigate and test existing indicators, to help determine the extent to which new ESD indicators are at all needed.

It must also be said that identifying and compiling all existing education and sustainability indicators is neither possible nor is it required. For example, our evaluation of sustainability indicators systematically avoided an investigation of monitoring and benchmarking indicators like those developed by many countries and cities around the globe.¹ The aim was much more to filter out the indicators having potential for application in the field of ESD from among the most important sources influencing Europe and the English-speaking countries.

In addition to researching the literature, interviews were conducted with experts from various countries (Austria, Switzerland, Germany, Italy, Lithuania, England and Canada) to provide an overview of the state of research and practice in the field of ESD, to include the development of ESD indicators, in each country. We furthermore discussed existing development perspectives for such indicators with the experts, to ensure that the resulting findings and inputs are taken into consideration for the design of a future research project to develop ESD indicators. These findings and inputs are discussed in Part C of the Pilot Study, which deals specifically with the perspectives for continued development of ESD indicators.

3 Basic Assumptions

The basic assumptions underlying this pilot study are listed as follows:

- 1) The first assumption underlying our general understanding of indicators is that we see education and sustainable development as open and complex processes. This complexity implies that ESD-processes cannot be adequately measured by short-term outputs only – since the factors that influence a given development are multifarious.
- 2) This implies that there is neither a direct cause-effect relation between input and output, nor can ESD solely be reflected by numbers or statistics. Thus, we must shift the weight from a tradition of merely measuring precise figures toward a new approach that focuses more on orientation and critical reflection.
- 3) An ESD indicator system has its own logic and ethic, and the model and values that such a system is based on must be made explicit. Indicators are not value-free, but always refer to a certain set of values. The values and

¹ See for example: International Institute for Sustainable Development, Compendium of Sustainable Development Indicator Initiatives; <http://www.iisd.org/measure/compendium> (Status: 4 June 2006).

models will thus differ according to the cultural context, the particular area of education and the project elements to be evaluated. Differences and similarities between models – and therefore between indicators – furthermore provide an element of comparison and evaluation.

4) ESD indicators do not only accept updating, but *need* to be continuously updated: They do not constitute a static system, but a continuously developing and dynamic one in which the actual indicator set must be driven by continuous learning and renewal rather than a pre-determined and fixed framework.

5) ESD Indicators can never be used alone. Instead, they need to be correlated within a system in which the relations and interactions between the components and agents also make up an evaluation element. Ultimately, the ESD-indicator approach to evaluation and orientation is systemic and context-dependent, and thus acknowledges that the information provided by the whole system is greater than that provided by the sum of its parts.

4 Summary of Findings Relating to Higher Education Institutions

4.1 Point of Departure

Despite the impulses generated by the declaration of the UN Decade, the topic of ESD presently receives no explicit emphasis within the European and international higher-education landscape.² Though markedly growing in number, the as yet few sustainability pioneers on the university level focus their efforts more on general ESD themes, while rarely reflecting on the specific education aspects inherent to the *Leitbild* (“core principles”) of sustainability. Along these lines, it can be stated that ecologization is indeed increasing (Filho, 2000) among international universities, as is the sensitization for sustainability issues – with environmental technology being the key focal point. However, the true core aspects of ESD with respect to higher education, such as sustainability in higher education didactics (Vielhaber, 1998) and research-education cooperation (Radits et al., 2005), remain on the margins of the sustainability process as practiced on the university level. Furthermore, universities that do place an explicit emphasis on these core aspects frequently do not perceive them as belonging to the overall sustainability process of the university as a whole.³

Even if ESD most often receives no explicit emphasis at individual universities, the general preoccupation with the topic of sustainability on the university level, as well as the longstanding debate regarding inter- and transdisciplinary processes (Balsiger et al., 1996), give every indication that an open and dynamic ESD process is in place. If one can assume that, within the scope of ESD, education institutions should enable us to not only understand sustainable development, but also to help actively shape it, then increased integration of sustainability into the curricula and *Leitbilder* (“core principles”) of universities is surely an important aspect of the ESD

² Discussion with Charles Hopkins and Laima Gutma, March 14, 2006. Exceptions here were the University of Lüneburg (Germany) and Macquarie University (Australia).

³ Interesting to note in this regard is the fact that the goals and challenges of the ESD Decade have apparently been better absorbed within the compulsory education sector than among higher education institutions (See Mogensen & Mayer, 2005).

process; and, furthermore, the context of sustainability and universities cannot be separated from the topic of ESD. As for the identification and analysis of already existing indicators that should reflect ESD on the university level, this means that, at the present, there exist primarily *implicit* ESD indicators, respective of those sustainability indicators whose pertinence to ESD processes stand in the shadows of the general sustainability discourse.

Adding to this early-stage marginalization of ESD at the university level is the problem that the concept of ESD as a new education approach (de Haan, 2001) is often blended with that of sustainable development as a socio-regulative concept (Minsch, 1997), thus significantly impacting the situation at the point of departure for the present Pilot Study. As holds true for the general debate regarding ESD⁴, it is this differentiation – or precise demarcation – between sustainability and ESD within the university context that is accompanied by several conceptual difficulties; and this problem also extends to the differentiation between general sustainability indicators and specific ESD indicators for use in higher education. At the present, there are *almost no* concrete and detailed ESD indicator sets specifically for universities, with essential research initiatives toward this end either in the planning stage only or in the earliest stages of implementation.⁵

Because the declared goal of our Pilot Study is to achieve an optimal “position” and preparation for a future international research and development project focusing on ESD indicators, and furthermore to document important related examples, trends and long-range perspectives, a two-part approach was chosen for solving the problems of limited data availability and difficulty in differentiating between ESD and sustainability indicators. On the one hand, we have attempted to provide a *systemic* overview of the context in which ESD indicators for universities are developed, or could be developed. Toward this end, a primary emphasis was placed on linking ESD indicators to “conventional” sustainability indicators already in use within the higher education sector. On the other hand, the study also provides an *overview* of the current, as yet relatively low, state of indicator development – within the context of ESD as it applies to higher education. Building on the foregoing systemic descriptions, we go on to provide examples of existing indicator sets. In particular, these examples are meant to demonstrate how sustainability indicators can be transformed to ESD indicators, as well as to point out the development and learning processes required for such a transformation.

4.2 The Status of ESD Indicators in the Higher Education Arena

In the following chapter, we provide an overview of existing ESD indicators within the higher education sector. These are not limited to ESD-specific indicators, as we chose to also investigate indicators from the fields of sustainable development and education, with sustainability indicators receiving primary emphasis. Education indicators were included only to the extent that awareness for the latter exists also within the sustainability field. With regard to any future research project into ESD indicators, we recommend that existing education indicators within the university sector be identified and tested for their suitability or adaptability to ESD uses. Of

⁴ For example, the initial drafts of the UNECE’s catalog of ESD indicators repeatedly referred to “sustainable development” when in fact “Education for Sustainable Development” was specifically meant.

⁵ See also: Research Institute in Education for Sustainability (ARIES) (2006) ‘Identification DESD – Project Brief’, [Online] available at: <http://www.aries.mg.edu.au/project.htm> (May 25, 2006).

special interest in this regard will be the link to quality-related indicators (key among them being university rankings) and to indicators reflecting a university's knowledge inventory. As such, we consider it of primary importance, especially with respect to university reporting, that ESD processes and indicators are not presented as an additional task to be completed; instead, they should be integrated into existing monitoring and reporting processes (for example, as part of knowledge inventories).⁶

Before proceeding with the actual identification of indicators, we shall comment on the systemic context of indicator development in the higher education sector and provide initial ideas for potentially structuring ESD indicators. Proceeding in this fashion will advance the current – and possibly future – “position” of the state of indicator development.

4.3 A Systemic Overview and Structuring of ESD Indicators in the Higher Education Sector

As mentioned in the Pilot Study, UNESCO's Agenda 21 foresees a major role for education as a sub-aspect of the larger sustainable development topic (UNESCO, 2004). Indeed, education is the central process and “impulse giver” toward the goal of achieving a sustainable societal transformation (Sterling, 2001).

As a result, universities – and other education institutions of adequate size – reflect the *Spannungsfeld* (“field of tension”) that surrounds sustainability and change on two concrete levels:

1. **The Physical Level**
(Resources, Energy, Waste, etc.)
2. **The Socio-Economic Level**
(Education, Research, Transfer, Jobs, Production Site, etc.)

The first level defines universities as physical institutions with a commensurate need to consume resources, energy, space and other physical factors. The evaluation and description of sustainability on this level is based on such characteristic data as annual waste accumulation, energy consumption, etc. As a result, sustainable development on this level is primarily depicted using *environmental indicators*.

The second level refers to societal and cultural processes, and offers room for such phenomena as socio-economic interaction, value and norm building, and research and education. On this level, universities can be described either as **socio-economic institutions** or **education institutions**. According to this dual character, sustainable development is described using *social* or *economic indicators*, or oriented around specific *education indicators*.

Given that a university system can be viewed on these two separate levels, the processes and structures in place on both levels (physical and socio-economic) together make up the open and dynamic overall system referred to as the “sustainable university.” The analytical framework is thus defined as including the entire process of sustainable higher education, which, according to the ESD approach, extends far beyond the lecture hall and seminar room to also include “new places and forms of learning” (BLK,

⁶ Discussion with Martin Gerzabek, March 14, 2006

2001).⁷ From this, it follows that a university education can also encompass open and, in part, informal learning processes occurring outside of the official curricula – i.e., on the level of university management – to include everything from student initiatives through to regional activities that integrate the university.

A systemic view of “sustainable higher education” thus spans from the official learning processes and curricula through to the context-specific learning and forming processes of the entire university. At the same time, this dual view of university-level learning processes also takes into account the most fundamental goal of ESD, which aims not only to achieve an education-induced alteration of society (i.e., through curricula and knowledge transfer) but, much more so, a *transformation of the education system*⁸ (through internal and partially institutionalized learning and reflection processes).

With respect to ESD indicators for universities, this duality necessitates a dynamic and context-specific adjustment of the “intersection approach,” as depicted in Figure 1, Chapter 2 (Methodology) in the Pilot Study. This means that one and the same indicator can show different qualities related to higher-education processes or structures, depending on the chosen focus and the context analyzed. Thus, the size and comprehensiveness of the intersecting subset of ESD indicators – a result that includes both education and sustainability indicators – can change according to the specific context of the university. The following explanation using the indicator “accumulated waste per student” serves as an example:

The indicator (accumulated waste) provides a current snapshot on the physical level and – being clearly environmental in scope – does not relate directly to education. Within a different context, however, this same indicator could be integral to a university’s ESD indicator set: namely, if accumulated waste is either directly or indirectly connected to the university’s existing ESD process, or if accumulated waste has been selected as a key theme as the result of an internal participative learning or formative process. In the second case, one could designate accumulated waste as an ESD indicator based on the given context, since, depending on how one views the situation, this indicator may be very useful for drawing conclusions about the various problems (structural or process-related) that need to be addressed on the different levels of the “sustainable university.”

The above demonstrates that sustainability and ESD indicators are largely context-specific. However, it also means that indicators with no clear relation to the goals, issues, institutional framework and, above all, internal learning and formative processes have limited expressive power. This applies to the goal of achieving the intended transformation of society at large and, even more so, to the desired alteration of the education system.

⁷ *“Education in and out of the classroom for students and employees is the primary means and end. Building a sustainable university is not about environmental compliance, but about stimulating students to become good global citizens and creating the knowledge to out-do themselves in striving for sustainability”* (Utah State University Environmental Campus Task Force, 2003: 6).

⁸ In reference to the ESD approach of “second order learning” as described by Steven Sterling (2001), although universities worldwide (and especially in Austria) are increasingly demonstrating aspects of practice and problem orientation, only in seldom cases have they implemented the higher goal of critical reflection upon, and continuous questioning of, their own education systems, processes and/or methods.

Given the above described background, namely of the dual (external/internal change) and context-sensitive nature of ESD indicators as relating to higher education, the following concrete description of existing ESD indicators for the university level permits a clearer structuring of the issues with respect to three key interdependent areas or levels:

1. **The area of political-regulative guidelines, laws and programs, as well as national or international strategies.**
2. **The area of appraisal and/or evaluation guidelines with respect to sustainability assessment tools.**
3. **The area of universities themselves as educational institutions, to specifically include their own sustainability indicators.**

Within the *political-regulative* area, our study portrays ESD indicator development and investigates the use of such indicators based on official documents that either shape or govern the general framework of university development (for example, the UNECE strategy for ESD and laws applying to universities).

For the second area of *university-level assessments* and evaluations, our examination is based on a review and analysis (using examples) of existing assessment tools and guidelines made available to universities by outside institutions.

The third area concentrating on the *universities themselves* pertains to the development and use of ESD indicators by individual universities that have demonstrated themselves to be true pioneers of sustainable higher education.

4.4. ESD Indicators on the Political-Regulative Level

Since the official start of the UN Decade, a greater focus has been placed on implementing and integrating ESD, with a distinction to be made between national efforts (such as the work toward an Austrian ESD strategy) and the international framework conditions. Our diagnosis shows that, in general, there is a current lack of general ESD indicators on both the national and international level – and, in particular, a marked dearth of higher education-specific ESD indicator sets. This lack of adequate indicators for use in depicting the state of the effort to integrate ESD into national education systems also extends to core UNESCO documents (UNESCO, 2004). Despite this deficiency of ESD indicators, UNESCO emphasizes that:

“A key aspect of monitoring and evaluation will be the identification of suitable, relevant and measurable indicators at every level – local, national, regional and international [...]” (Draft International Implementation Scheme, UNESCO, 2004: 40).

On the international level, the UNECE has been working to overcome the shortfall of indicators since 2005.⁹ As a starting point for its activities, the organization adopted the UNECE Strategy for Education for Sustainable Development at a meeting of education and environmental ministers in

⁹ Complementary to the work of the UNECE, the “UNESCO-IUCN CEC DESD Indicators Project” is currently undertaking the establishment of an operational set of guidelines whose purpose is to support national ESD development efforts (Pertinent information available from: Sonja Janousek, sjanouse@gse.mq.edu.au) (Status: June 4, 2006).

Vilnius (Lithuania), held on March 17–18, 2005 (UNECE, 2004). Parallel to the official strategy, the establishment of an Expert Group on ESD Indicators¹⁰ was agreed to, with the group's tasking – scheduled for completion by May 2006 – being as follows:

“to develop indicators to measure the effectiveness of the implementation of the Strategy”.
(UNECE, 2004)

Though constrained by the narrow framework of the UNECE Strategy, the Expert Group's preliminary results – consisting of 18 ESD indicators and 48 sub-indicators – represent the only coherent ESD indicator set to date within the political-regulative arena. Even if the Expert Group, through its exclusive mandate on the UNECE Strategy, has been able to deliberate the multifarious nature of ESD indicators only to a limited extent, several of the indicators recommended by the group are of key significance to the higher education sector (see also Appendix 12.1). Of particular interest to universities are the focal goals of these indicators, namely that:

- Policy, regulatory and operational frameworks support the promotion of ESD
- SD key themes are addressed in formal education (e.g., in the curriculum/program, learning targets)
- Strategies to implement ESD are clearly identified (e.g., cross-curriculum approach)
- A whole institution approach¹¹ to ESD/SD is promoted
- ESD is addressed by quality assessment / enhancement systems
- ESD is included in the training¹² of educators
- Quality control mechanisms for teaching tools and ESD materials exist
- Research¹³ on ESD is promoted
- Dissemination of research results on ESD is promoted

Crucial to the focus on ESD indicators for the university realm – a focus that is further strengthened by the accompanying sub-indicators – is the systemic approach to “sustainable higher education,” for it clearly reflects the dual nature of ESD (physical vs. socio-economic actors; internal vs. external change). Toward this end, the spectrum of indication extends from internal learning and formative processes (quality assessment, training of educators, whole institution approach) through to external learning and formative processes (dissemination, learning targets, curriculum).

Also deemed essential is the context-related nature of the UNECE Expert Group's ESD indicator set, as well as the limited expressive power of individual indicators taken alone. In this regard, group member Paul Vare commented:

¹⁰ The first meeting of the Expert Group was held September 26-28, 2005, in Ede (Netherlands). The UNECE will officially decide on the Expert Group's recommended indicators in November 2006. See also: <http://www.unece.org/env/esd/HLmeetMarch2005.htm>

¹¹ For universities, the concept of a “*whole institution approach*” means that all administration and management aspects, as well as all external interaction and cooperation, are evaluated and improved in the light of sustainable development. As part of this approach, each institution decides on its actions within the three overlapping areas of university administration/management, curricula and societal anchoring/external relations.

¹² Toward this end, ESD is treated in regard to content and/or methods.

¹³ Included here is state aid, as well as support from businesses and NGOs.

“Each indicator reflects a part of the picture, which means that there is plenty of scope for others (and ourselves) to dwell on the shortcomings of any single indicator or sub-question. (...) This is an ‘indicator set,’ as such, no single indicator or sub-question should be seen as indicative of good (or poor) practice in its own right. Rather it is the combination of answers that will indicate the state of progress in, and effectiveness of, implementing the UNECE Strategy for ESD.”¹⁴

With respect to national-level work on ESD indicators, no coherent results or completed ESD indicator sets exist to date; even if there are projects underway (none of them yet completed) in several countries to develop ESD indicators for the formal education sector¹⁵ whose results will also affect tertiary education. These initiatives are addressed in Chapter 6 of the Pilot Study. Certainly, it can be expected that this continuing work on national ESD strategies around the globe (including in Austria) will bring with it an additional phase of monitoring and indicator development.

Interim Conclusion: ESD Indicators on the Political-Regulative Level

At the present, sufficiently elaborated ESD indicators for the tertiary education sector do not exist on either the national or international level. An exception to this finding is the preliminary set of UNECE indicators mentioned previously, whose general transferability is limited due to an exclusive focus on implementing the UNECE Strategy. Notwithstanding this fact, the beginnings represented by these UNECE indicators underscore the need for context-specific ESD indicators that reflect the paradigmatic changes within societal and education systems.

The relevant indicators stemming from the political-regulative level, including those of the UNECE, are listed in Appendix 12.1.

4.4 ESD Indicators with Sustainability Assessment Tools

To anchor sustainability in daily campus life, a comprehensive inventory and assessment of sustainability aspects frequently forms the basis of the overall learning and formative process at “sustainable universities.” To date, some 220 projects for assessing sustainability exist at universities worldwide (Glasser & Nixon, 2002; Nixon, 2002). Standing out in particular are the various guidelines and tools – some of them international in scope – intended to support universities in the assessment process; and which, in doing so, specifically reference sustainability indicators. For example purposes, four sustainability assessment tools used on the university level are briefly described below:

¹⁴ Discussion with Paul Vare, March 14, 2006.

¹⁵ See, among others:

Australia: Australian Research Institute in Education for Sustainability (ARIES) (2006) ‘Identification DESD – Project Brief,’ [Online] Available at: <http://www.aries.mq.edu.au/project.htm>;

Germany: Rode, H. (2006) ‘Different indicators for different contexts? Developing indicators for ESD Germany,’ Stimulus material for break-out groups at the Bath Royal Literary & Scientific Institute, UK, March 17th <http://www.bath.ac.uk/cree/resources/esrcesd/rode.pdf> [Accessed March 27, 2006];

Italy: Agenzia Regionale per la protezione ambientale della Toscana (ARPAT) (2005) ‘Inter-regional Project on Quality Indicators: to apply to regional INFEA systems’, Florence: The Tuscan System for Environmental Education.

1. Higher Educations 21's Sustainable Indicators
2. Auditing Instrument for Sustainability in Higher Education (AISHE)
3. Sustainable Pathways Toolkit (see Appendix 12.2)
4. Campus Sustainability Assessment Framework (CSAF).

These four tools were chosen for the innovative nature of their approach on the one hand and, on the other, because each of the four approaches differs from the rest – thus particularly highlighting the methodological diversity that is so integral to the character of ESD.

Table 2: Summary of Assessment Tools

Assessment Tool	Indicators	Strengths	Weaknesses
Higher Educations 21's Sustainable Indicators	Focus is on 20 key indicators that are participatively established and concise	Process-related; Small number of key indicators; Strategic orientation	Limited comparability and opportunities for benchmarking; Discrepancies between indicators and problem areas
Auditing Instrument for Sustainability in Higher Education (AISHE)	Orientation and evaluation determined by sustainability criteria and development state; Actual indication occurs through stakeholder workshops	Process-related; Flexible framework for institutional comparability; Permits prioritization; Partial goals and development levels	Factors out personal motivation; High degree of complexity and abstraction; Uses no indicators in the conventional sense
Sustainable Pathways Toolkit	Focus is on 15 sustainability indicators having a strong environmental management and health component	Measures and action oriented; Clear, manageable and easy to implement due to its consensual basis	Marginalization of the education and social aspect; Overly focused on consensus as a basic requirement, thus hindering critical reflection
Campus Sustainability Assessment Framework (CSAF)	Focus is on 175 sustainability indicators that emphasize the ecological framework in terms of its supporting function for the societal sphere	Participative and user oriented; Process based and suited to achieving bottom-up and top-down balance; Conceptual framework lends good comparability	As yet, unmanageable data volume; Still missing connection to measures (short and long-term goals); Lack of clarity and, presently, still in the rough stage

Interim Conclusion: ESD Indicators with Sustainability Assessment Tools

Despite the significant diversity between the four introduced assessment tools, all of them share several core elements that tie in with the key principles of ESD. With respect to indicator development, all four tools

emphasize the need for *operationalization* in support of increased *context awareness* and *stakeholder evaluation* for indicator-based measures. This focus on linking process-based evaluation with the integration of stakeholders and the accompanying goals of the university to a great extent accommodates the integrative and participative nature of ESD. In addition, it enables the tools' ESD-dedicated sustainability indicators to be partially adapted and used in terms of contextual ESD indicators.

In the university arena, learning and communication processes on the “upstream” side together with stakeholder evaluations of indicator-based measures “downstream” enable the evaluation and indication of ESD processes on both the physical- and economic-institutional level. At the same time, this permits a partial accommodation of the dual nature of ESD learning processes (internal and external change), while also helping to better tie in ESD for solving concrete problems and challenges.

On the other hand, all of the tools examined display a “blind spot” when it comes to the social dimension, as they insufficiently reflect the social processes of universities and also come up short in terms of depicting the social implications of the higher-education campus within the context of society at large. In terms of ESD, the initiation of both internal and external learning and transformation processes is thus insufficient. And, likewise can be said for the education aspect: For, even if the indicators do take into account curricula in some individual cases, this aspect is limited by classic teaching methods whose focus is solely on the environment. Essential education aspects for ESD indicators within a narrower sense – such as university didactics, interdisciplinarity, research-education cooperation, as well as regional cooperation and practices – remain largely factored out.

4.5. ESD Indicators in University-Level Sustainability Reporting

As for the universities themselves, this level of investigation differs from the two presented previously, in particular because there are numerous sustainability indicator sets to be observed which, to a partial extent, bear a high relevance and specificity for the ESD process. The identification and depiction of indicator sets by the so-called “sustainability pioneers” on the university-level is generally approached through the globally ever more prevalent process (among higher education institutes) of sustainability reporting (Glasser & Nixon, 2002). By reflecting on various aspects of communication, motivation and university management, an examination of sustainability reporting thus permits a comprehensive analysis of the university-specific context¹⁶ to which ESD indicators can be applied. Using the spectrum of existing sustainability reports on the university level as a starting point, the sustainability indicators they use can additionally be subdivided by general type – e.g., as guideline-supported, environment-oriented or stakeholder-oriented processes – for further examination (Albrecht, 2006, i.V.). In keeping with the Pilot Study's focus on ESD-relevant indicators (which, depending on the context, can be found among these guideline-supported, environment-oriented or stakeholder-oriented processes), we provide a brief overview of internationally used sustainability indicator sets in the following section (see Table 3). Thereafter, we shall describe four case examples in detail, upon which the study proceeds to four existing indicator sets that will serve as the basis for

¹⁶ This description of the context also enables an initial estimate to what degree contextual ESD indicators already exist, beyond the extant ESD core indicators.

describing the general characteristics of an internationally clearly recognizable trend within the higher education sector.

The following table (based on Albrecht, 2006, i.V.) offers an initial overview of colleges and universities whose sustainability reporting explicitly relies on indicator sets. In addition, the table shows the type of assessment/report used by each institution.

Table 3: Sustainability Reports and Indicators on the University Level

UNIVERSITY	COUNTRY	TYPE OF ASSESSMENT/REPORTING	TITLE AND YEAR OF THE REPORT
Dartmouth College	USA	GRI Guidelines plus evaluation of reporting	The Feasibility of Sustainable Reporting at Dartmouth College (2003)
Holme Lacy College	England	TBL concept	Toward a Sustainable Holme Lacy College (2001)
Michigan State University	USA	3-pillar model	Campus Sustainability Report (2003)
Monash University	Australia	TBL concept	Annual Report (2004)
Penn State University	USA	Expanded environmental indicator set	Indicators Report 2000: Steps Toward A Sustainable University
Reed College	USA	Sustainable assessment i.a.w. the Sustainable Pathways Toolkit (Good Company)	Sustainability Assessment (2002)
University of Osnabrück	Germany	3-pillar model with expanded environmental report	Zukunft – Bericht 2004 (“Future Report” of the University of Osnabrück)
Concordia University	Canada	Campus Sustainability Assessment Framework – CSAF (Lindsay Cole)	Concordia Campus Sustainability 2003 Assessment
University of British Columbia	Canada	Descriptive report on the sustainability process without explicit indicators	Annual Report – Progress Toward a Sustainable Campus (2003)
University of California	USA	Own sustainability assessment with a strong participative aspect	Campus Sustainability Assessment (2005)
University of Florida	USA	GRI Guidelines	Sustainability Indicators (2001)
University of Hong Kong	China	GRI Guidelines with increased stakeholder integration	Pursuing Sustainability 2004
University of Michigan	USA	GRI Guidelines	Sustainability Assessment and Reporting of Michigan (2002)
University of North Carolina at Greensboro	USA	Sustainable assessment i.a.w. the Sustainable Pathways Toolkit (Good Company)	Campus Sustainability Report ()

University of Oregon	USA	Sustainable assessment i.a.w. the Sustainable Pathways Toolkit (Good Company)	Sustainability Assessment (2002)
University of Victoria	Canada	Expanded environmental indicator set	Facilities Management Sustainability Report 2003~2004
University of York	Canada	Expanded environmental indicator set	Sustainability on the Keele Campus: The Story so Far (2001)
Utah State University	USA	Sustainability assessment based heavily on the Penn State indicators, with the explicit integration of sustainability education	Utah State University Criteria for Best Practices in Campus Sustainability (2003)
Vassar College	USA	Sustainable assessment i.a.w. the Sustainable Pathways Toolkit (Good Company)	Sustainability Assessment (2003)

In summary, the sustainability indicator sets currently used by pioneering institutions on the university level can be broken down into the following four categories:

1. Those based on the Triple Bottom Line (TBL) approach.
2. Those based on an expanded environmental indicator set (expanded environmental reporting).
3. Those based on standardized sustainability assessments, such as the Sustainable Pathways Toolkit (Good Company) and CSAF as developed by Lindsay Cole.
4. Those based on the Global Reporting Initiative (GRI) Guidelines.

Interim Conclusion: ESD Indicators in University-Level Sustainability Reporting

More so than the previous two areas of examination, the dual character of ESD indicators is more readily observable on the level of sustainability reporting by universities – to include an alignment toward societal transformation and the necessary change within the education system. Whereas ESD indicators more strongly reflect the respective superordinate framework conditions for ESD processes on the political-regulative level, on the university level potential ESD indicators present themselves either as *core indicators* or *contextual indicators*.

In reference to Chapter 2, university-level ESD core indicators can be defined according to the relation they bear to the core principles¹⁷ of the UNECE implementation scheme. Furthermore, in connection with the essential points of reference to the idea of a “sustainable university” (Filho, 2000), ESD core indicators on the university level reflect the following fields of action, among others:

- Curricula
- University Didactics

¹⁷ Summarized and defined here as: participation, methodological diversity, interdisciplinarity, value orientation toward the *Leitbild* of sustained development, applicability in real life and reflectivity/critical thinking.

- Research
- Research-Education Cooperation
- Participation and Decision Making
- Communal and Regional Integration / Knowledge Transfer
- Continuing Education and Training

With the exception of research and, to a limited extent, curricula, communal and regional integration and knowledge transfer, these fields of action are, as yet, reflected only to a small degree internationally, while existing sustainability indicator sets on the university level furthermore lack a clear focus on education.

In contrast to the above mentioned fields of action related to ESD core indicators, contextual ESD indicators for the higher education sector can be assigned to those areas depicted by classic indicators from the following fields of action: environment, economy and, to a degree, the social field. Thereby, it becomes clearly recognizable that institutionalized learning and forming processes, as well as participative assessment processes, supply the necessary prerequisites to permit classic sustainability indicators to contribute to a greater orientation toward, and reflection upon, ESD processes within the sense of an expanded “intersection approach.”

This English-language summary contains an abbreviated version of the original Pilot Study “Indikatoren einer Bildung für nachhaltige Entwicklung” (Indicators of an Education for Sustainable Development).

The full version of the pilot study (in German) can be downloaded free of charge by visiting: www.umweltbildung.at (to be found under “Publikationen”).

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