SETTING A GOOD EXAMPLE – GOOD PRACTICE OF SUSTAINABLE DEVELOPMENT IN INSTITUTIONS OF HIGHER EDUCATION

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Setting a good example – good practice of sustainable development in institutions of higher education

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Towards Sustainability. A report serie from the Sustainability Profile work at Mälardalen University

Sustainable development is a major challenge for present and future society. Universities have a central role in the process for sustainable development and this includes all activities of higher education: research, education, contacts with society in large and how everyday operations are run. It is therefore important that universities actively engage with knowledge and learning about sustainable development, not the least that the engagement of students and teachers increase.

Mälardalen University has worked systematically with sustainable development in research, education and everyday operations (for instance: certified since 1999 according to ISO 14001). Sustainable development is an area of strategic priority. Since 2006 there are three strategic processes that aim at further developing this area. For research, we have a Cooperation with Örebro University, started by the presidents of both universities, to enable prospering research environments regarding sustainable development. For education and everyday operations, we have the so-called Sustainable Profile Committee to work towards becoming a sustainability university. In connection with this a joint project with WWF - World Wide Fund for nature has been launched for the period of 2008-2010. As the only university in Sweden, Mälardalens University has been chosen among ten so called Model Schools Towards Sustainability. The overall goal for the cooperation is to enhance the development and spreading of good practice in education for sustainable development.

We are both involved in the project management for these strategic processes and have had the fortune to set up three exciting studies that analyse different aspects of sustainable development at Swedish and European universities:

Towards Sustainability 1
Strategic Analysis of PhD Studies and Education on the Masters Level in the Area of Sustainable Development (2008). By Lena Widefjäll. The Report is part of the Cooperation project mentioned above and is in Swedish: "Omvärldsanalys av forskarutbildningar och utbildning på avancerad nivå inom området Hållbar utveckling".

Towards Sustainability 2
Inventory of Sustainable Development in Courses and Programmes at Mälardalen University (2008). By Lena Widefjäll. The Report is part of the Sustainable Profile project mentioned above and is in Swedish: "Inventering av hållbar utveckling i kurser och program vid Mälardalens högskola".

Towards Sustainability 3
Setting a good example. Good practice of sustainable development in institutions of higher education (2008). By Matthias Schröter. The Report is part of the Sustainable Profile project mentioned above and is in English. 49 universities in Germany and United Kingdom and their everyday operations are analysed in many different ways such as administration and education, among students and teachers, aiming at energy saving and development of technology. An analysis of relevant criteria results in ten criteria of what could make up a sustainable university. The report presents as many as 360 illustrations that inspires us at Mälardalen University and hopefully others around Sweden and elsewhere.

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Abstract

The challenges of global change and the construction of a sustainable society are not imaginable without contributions of institutions of higher education. Some have taken first steps toward a sustainable university. An investigation of university declarations on sustainable development and a literature review led to an operationalization of a “sustainable university” with the help of ten emerging themes.

According to these, a sustainable university would make an institutional commitment to the idea of sustainable development and it would consider sustainability aspects in its operations. It would emphasize ethical obligations. Research on sustainable development would be promoted and environmental literacy and awareness of the university community and the public would be enhanced. Interdisciplinarity of research and education would be on the agenda of such an institution and cooperation between universities in sustainability issues as well as networking would be promoted. A sustainable university would transfer knowledge to society and would be engaged in partnerships with other sectors. It would communicate its efforts to the academia and to the public at large. In a sustainable university, staff and students would have to have the possibility to participate in shaping the institution’s future development in a sustainable way.

An empirical investigation was conducted on 49 institutions in Germany and in the United Kingdom in order to exemplify these themes of sustainability at an institution of higher education. These were completed by some examples from outside the focal area. A variety of examples were found which range from institutional commitment in form of sustainability policies to the installation of solar cells on university roofs and offsetting carbon dioxide emissions. Toner cartridge recycling for charitable purposes, a complete switch to recycled paper, energy saving contests, organic food in university cafeterias, university-wide promotion of fair trade products, travel management, biodiversity action plans as well as health promotion are on the agenda of different institutions of higher education. Other examples are the integration of the idea of sustainability into study programs, educational projects with pupils, comprehensive sustainability reports of the institution’s achievements and working teams where staff and students can participate in the process of change toward a sustainable institution. Altogether, this study refers to more than 360 good practice examples in ten different fields and provides ideas, alternatives and perspectives of what is done in order to create a “sustainable university”.
# Table of Contents

1 Introduction ..................................................................................................................1
  1.1 In search of a sustainable university.................................................................1
  1.2 Aim .........................................................................................................................2
  1.3 Methodology ..........................................................................................................3
    1.3.1 Defining themes of sustainable developments ..............................................3
    1.3.2 The choice of institutions of higher education ..............................................3
    1.3.3 Restrictions ....................................................................................................5

2 Emerging themes of sustainable development at institutions of higher education...6
  2.1 University declarations on sustainable development .........................................6
  2.2 Literature review ...................................................................................................7
  2.3 Defining themes of sustainable development at IHE .........................................8

3 Good practice of sustainability at IHE ..................................................................10
  3.1 Institutional commitment ......................................................................................10
  3.2 Sustainable operations .........................................................................................12
    3.2.1 Reduction of energy use..............................................................................13
    3.2.2 Renewable energy.......................................................................................14
    3.2.3 Carbon management .................................................................................15
    3.2.4 Water conservation .....................................................................................16
    3.2.5 Waste recycling .........................................................................................16
    3.2.6 Procurement ...............................................................................................18
    3.2.7 Food and drinks .........................................................................................20
    3.2.8 Transport ....................................................................................................21
    3.2.9 Biodiversity and nature conservation ..........................................................24
    3.2.10 Comprehensive projects ..........................................................................24
    3.2.11 Funding of sustainable development ..........................................................25
    3.2.12 Social aspects ............................................................................................26
  3.3 Emphasis on ethical obligations ............................................................................28
  3.4 Research on sustainable development .................................................................28
    3.4.1 Analyses of sustainability and environmental aspects in research ............29
    3.4.2 Research centres ........................................................................................29
  3.5 Environmental literacy and awareness ..................................................................30
    3.5.1 Sustainable development in the curriculum ...............................................30
    3.5.2 Environmental awareness of the university community ...............................32
  3.6 Interdisciplinarity of research and education ......................................................36
  3.7 Inter-university cooperation and networking ......................................................37
  3.8 Knowledge transfer and partnerships with other sectors .................................38
    3.8.1 Conferences and events .............................................................................38
    3.8.2 Educational projects with pupils ................................................................39
    3.8.3 Sustainable entrepreneurship and spin outs .................................................40
    3.8.4 Knowledge portals .....................................................................................40
    3.8.5 Networking and community engagement ....................................................40
  3.9 Sustainability communication ..............................................................................42
1 Introduction

1.1 In search of a sustainable university

In order to face the challenges of global change and to build a sustainable society universities and other institutions of higher education¹ have to make significant contributions. Although universities do not show obvious signs of environmental degradation – smokestacks and leaking outfall pipes are missing – environmental effects of universities are considerable. As the University of Graz puts it in its sustainability report: “one does not only educate and do research in a university, but people also write, heat, drive, clean and eat.” (Universität Graz 2005, p. 8, own translation). Education for sustainable development and new knowledge needed to face global change are outputs of universities that are important for sustainable development.² Universities serve as role models in our society, they educate future leaders who might serve as multiplicators, they create new concepts and knowledge, and one can expect them to ‘practice what they preach’. In particular, they may set a good example for sustainable development and that is what this report is about. It may contribute to the discussion of what a sustainable university might look like.

A broad discussion on sustainable development³ has taken place, especially in the last thirty years. “Sustainability” has become a buzzword, it is used arbitrarily by different interest groups and its particular content is debatable (Clugston 1999, p. 12; Leal Filho 2000, p. 9; RSU 2002, p. 57; Kates, Parris & Leiserowitz 2005, pp. 9). Probably the most known and most cited definition is that of the World Commission on Environment and Development (WCED) from 1987 which defines a development as sustainable if it “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, p. 43). In that way, serving as a least common denominator, sustainability can be seen as a normative concept of inter- and intragenerational justice. It is then often referred to an integrated view of environmental, economic and social dimensions of human development.⁴ From the beginning of the discussion the concept of sustainability has had an ecological-economic focus: one should manage environmental resources in a way that human needs can be met over long periods of time. Historical roots are found in forestry in the 18th century where the simple idea of only harvesting as much as is regenerating is seen to be the first expression of the concept of sustainability as a consequence of environmental degradation (Michelsen, Danner & Rieckmann 2004, p. 19). This idea was reconfirmed by the WCED: “The concept of sustainability does imply limits – not absolute limits, but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities” (WCED 1987, p. 8).

The openness of the concept of sustainability implies the need to define and operationalize it in the context of a university. There are some approaches to a definition of a “sustainable

¹ The term “institution of higher education” is more encompassing than the term “university” as it comprises the German “Fachhochschule” [university of applied sciences] and different forms of “academies” as well as colleges. Nevertheless, as most of the institutions investigated in this report are universities the terms will be used synonymous throughout the report.

² As e.g. outlined in the Agenda 21, UNCED 1992, chapters 35 and 36.

³ One might define sustainability as a normative endpoint to which a sustainable development leads.

⁴ This so-called triple-bottom line has been characterized as a “grand compromise” (Kates, Parris & Leiserowitz 2005, p. 19) and criticized as a three column “list of wishes” (Brand & Jochum 2000, p. 75).
university”. According to Velazquez et al. (2006, p. 812) a sustainable university can be defined as

“A higher educational institution, as a whole or as a part, that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfill its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles.”

In an essay Michelsen (2006, p. 3), leader of the completed research project “Sustainable University” at the University of Lüneburg points to several similar aspects of a sustainable university. An excerpt of the essay can be read in the following:

“A sustainable university deals with the resources being at its disposal respectfully, efficiently and effectively and it attaches importance to a healthy life world. […] A sustainable university is aware of its social responsibility, faces up to regional and supra-regional challenges and is open-minded about other cultures.” (own translation)

Other important aspects of a sustainable university (interdisciplinarity and public outreach) are provided by Heinrichs (2008, pers. comm., 4 March), who contributed to the research project “Sustainable University”, as well:

“Social problems have to be dealt with in an exchange between scientific disciplines as well as between science and society. […] A sustainable university is called upon to take part in discourses on values and knowledge in order to contribute to a sustainable development as a regulative idea of safeguarding the future of society.” (own translation)

These approaches provide valuable insights into the vision of a sustainable university as a part of a society that has to take responsibility. They partly operationalize the concept of sustainability but still it remains rather abstract so that there is a need for further operationalization. Next to definitions of scholars and outcomes of broad discourses on sustainability, the concept can be defined “in practice” (Kates, Parris & Leiserowitz 2005, p. 17). It has to be contextualized to the special circumstances of a university, said in another way one has to “go into the specifics” of sustainability (Leal Filho 2000, p. 17). Some universities have taken first steps to an implementation of sustainability and the study at hand had a look at some of them in order to see if and in which ways the call for “going into the specifics” has been heard.

1.2 Aim

The aim of this study is to find out in which fields and by which means institutions of higher education (IHE) can promote a sustainable development. An analysis of earlier commitments in the higher education sector (particularly the signing of declarations) will illustrate what IHE shall do in order to promote a sustainable development of their own institution and of the society at large. Based on these insights the main objective of this study is to exemplify these broad categories of action by giving a broad empirical basis of good practice examples. The focal area of this study is Germany and the United Kingdom (UK). This is partly due to language restrictions (reports and websites in German and English could be considered) and partly due to the impression that the higher education sector in these countries seems to be
very active as a number of best-practice examples show (cf. BMBF 2004, Blaze Corcoran & Wals 2004; People and Planet 2007).

As examples are collected from different IHE which have different focal points in the promotion of a sustainable development, a compilation of these might contribute to the understanding of how a vision of a “sustainable university” could look like. Last but not least a comprehensive collection of existing, successful experience on how to form a sustainable university might provide ideas, options and perspectives for the university management of Mälardalen University.

1.3 Methodology

1.3.1 Defining themes of sustainable developments

In a first step it was necessary to find out how to define sustainable development at universities. As this study concentrates on good practice examples of sustainability it was appropriate to search for different emerging themes or fields in which action can be taken in institutions of higher education. This was done by an analysis of five international declarations on sustainable development of institutions of higher education: the Talloires Declaration (1990), the Halifax Declaration (1991), the Swansea declaration (1993), the Kyoto Declaration (1993) and the Copernicus Charter (1994). The results of the analysis were nine broad themes each of which was mentioned in at least two declarations. After a literature review another theme was added so that ten themes were analysed.

1.3.2 The choice of institutions of higher education

As mentioned above, this study focuses on IHE in Germany and the United Kingdom. In search of institutions of higher education setting a good example in sustainable development using the Internet as one of the main sources of information seemed to be most appropriate. Preceding empirical studies on the implementation of sustainable development in the higher education sector had to face low response rates which might be due to the lack of resources to answer questionnaires (Herz 2000; Walton, Alabaster & Jones 2000; BMBF 2004). With an Internet-based investigation the problem of low response rates could be avoided.

The studies of Herz (2000), Wright (2003) and Walton, Alabaster & Jones (2000) indicated that signing a declaration on sustainable development does not necessarily lead to the implementation of good practice in a sustainable development of the institution. Therefore, and assuming that some IHE might be active in sustainable development without signing any declaration, it seemed not appropriate to search among the signatories of declarations. Instead, the following proceeding was chosen:

- an Internet search with the keywords “nachhaltige Universität” [sustainable university] in the exact phrase; “Nachhaltigkeit” [sustainability] AND “Universität” [university] as well as “Nachhaltigkeit” AND “Hochschule” [university] was carried out with the help of the Internet search engine Google on January 8, 2008 to cover universities in Germany. IHE were chosen for a deeper investigation if the search result gave a hint on institutional commitment or projects of sustainable development.5

5 Total hit rate on March 7, 2008 on http://www.google.de for “nachhaltige Universität”: 1 370 hits, “Nachhaltigkeit” + “Universität” about 911,000 hits, “Nachhaltigkeit” + “Hochschule”: about 1,370,000 hits (The number of hits was decreasing the further the results were shown in a hit list page.).
- an Internet search with the keywords “sustainable university” in the exact phrase and “sustainability” AND “university” was carried out with the help of the internet search engine Google on January 14, 2008 to cover universities in the UK (as this led to an overwhelming amount of results only the first 150 hits were analysed)\(^6\).


- a database request for the sector “education” was conducted at Corporate Register, a database for sustainability, environmental and corporate social responsibility (CSR) reports.

- two rankings of the environmental performance of IHE, one in Germany (NABU 2002) and one in the UK (People and Planet 2007) were enquired and the 15 best universities were taken into consideration for further investigation.

Less overlaps this investigation led to a total number of 37 universities, technical universities and universities of applied sciences in Germany and 29 universities in the UK. With the chosen approach a considerable amount of universities from outside the focal area were found, most of them in the English language area (the USA, Canada, Australia and New Zealand) which provides data for an analysis of its own. A considerable number of universities dealing with sustainability and/or environmental issues were also found in Austria, Switzerland, Sweden, the Netherlands, Finland, Hong Kong and Japan.

The websites of the IHE in Germany and the UK were analysed for commitment and good practice examples of sustainable development. Sources were mainly sustainability and environmental reports and web pages of sustainability or environmental representatives.

In a next step those institutions where chosen that expressed institutional commitment to sustainability and/or environmental protection. The purpose was to look only at good practice examples that were centrally implemented and communicated by the university. It facilitated the search remarkably and raised the reproducibility of the research. A (publicly available) sustainability or environmental policy was taken as the decisive indicator for the commitment of an institution of higher education. Where this did not exist the self-perception or profile development as a “sustainable university” or the development of an “environmental profile” was considered as an institutional commitment.

This led to a number of 22 IHE in Germany and 27 IHE in the UK. For the excluded universities no institutional commitment information on contributions to sustainable development was found. The following analysis of good practice is therefore mainly based on these 49 IHE (see appendix 1). Where appropriate, good practice examples from other universities were consulted to give a broader picture.

\(^6\) Total hit rate on March 7, 2008 on http://www.google.de for "sustainable university" about 13,400 hits, for “sustainability” + “university”: about 3,400,000 hits.
1.3.3 Restrictions

The chosen approach for the search of good practice excludes IHE that do not communicate their commitment and/or projects concerning sustainable development on their web page. Additionally, it excludes projects at universities which are implemented decentrally, e.g. by single professorships or through the engagement of student groups. The search for examples was also restricted to those projects that were communicated as a “contribution to sustainable development” or “environmental protection”. Other projects concerning sustainability at the same university might exist that have not been presented in this context. Comprehensiveness and representativeness can therefore not be claimed for this report.
2 Emerging themes of sustainable development at institutions of higher education

2.1 University declarations on sustainable development

In order to create an appropriate pattern for the investigation on sustainable development in institutions of higher education, action plans of different declarations in this field have been analysed.

As a result of the United Nations Conference on the Human Environment in Stockholm in 1972, the Stockholm Declaration stated as one of the first international declarations the importance of environmental literacy and scientific research and development for an answer to increasing environmental problems, pointing indirectly to the role of universities (Wright 2002, p. 105; UNCHE 1972, Principles 19 and 20).

A number of declarations has been signed since then (cf. Wright 2002 for an overview), some of which directly relate to the contribution IHE should make to a sustainable development.

The Talloires declaration of 1990 was an initiative of university leaders stating a commitment to sustainable development and containing a “10 point action plan” (ULSF 1990). As of January 1, 2008 this declaration has been signed by 362 signatory institutions coming mainly from North- (160) and Latin America and the Caribbean (110), but also from Asia/South Pacific (36) and Europe/Russia (35) (ULSF 2008).


Two years later, a conference of university representatives of the International Association of Universities took place in Kyoto, resulting in a declaration containing a 10 point action plan (Wright 2002, p. 109; UNESCO 1993a).

The Swansea declaration was adopted at a conference of university representatives of the Association of Commonwealth Universities in 1993 (Wright 2002, pp. 109). It contained a program of seven areas of activity for universities in order to promote sustainable development (UNESCO 1993b).

Of particular interest for the European higher education sector is the CRE-Copernicus Charter of the Conference of European Rectors (CRE) which was developed in 1993, containing ten principles of action for universities (Wright 2002, p. 110, CRE-Copernicus 1994). As of January 8, 2008, 326 IHE had signed the charter (Copernicus Campus 2008).

An analysis of these five declarations showed that they overlap in covered themes and partly even use the same language. The result of the analysis was the determination of nine broad themes in which IHE can contribute to a sustainable development (see appendix 2). The defined themes are:

1. Institutional commitment
2. Sustainable operations
3. Emphasis on ethical obligations
4. Research on sustainable development
5. Environmental literacy and awareness (students, staff and public at large)
6. Interdisciplinarity of research and education
7. Inter-university cooperation and networking
8. Knowledge transfer and partnerships with other sectors
9. Sustainability communication

According to the analysis of the declarations, IHE should make an institutional commitment and operate sustainably. They should emphasize ethical obligations, conduct research on sustainable development and increase environmental literacy and awareness of employees, students and the public at large. Interdisciplinarity of research and education should be promoted. Inter-university cooperation and networking among each other is seen as an important way to contribute to sustainable development. In addition to that, knowledge on sustainable development should be transferred to the society and partnerships with other sectors should be fostered. Furthermore, the commitment universities make should be communicated.

2.2 Literature review

After an analysis of sustainability declarations of IHE, Wright (2002, p. 116) and Herz (2000, p. 41) draw conclusions similar to the results that have been discussed above.

One can say that these results are in line with several reflections on sustainable development of IHE. In a study of the German Federal Ministry of Education and Research (BMBF 2004, pp. 32) one can find four broad fields of action for universities: the generation of knowledge through multidisciplinary research, transfer of this knowledge in education and awareness raising, knowledge transfer and communication to society as well as institutional commitment and sustainable behavior (role model). Van Weenen (2000, pp. 30) presents physical operations, education and research, the involvement of the university management and the formulation of a mission statement as critical themes of a sustainable university. All of these activities are considered above.

Beringer (2007, pp. 454) develops the following ideas for themes of sustainability at a university:

- governance and administration (e.g. policy, audits and reports)
- research and scholarship (e.g. research centre, professorship, funding)
- curriculum (e.g. undergraduate, graduate and/or doctoral studies)
- student opportunities (e.g. university as a life world, student groups)
- operations (e.g. conservation of resources, ethical procurement)
- community service and outreach (e.g. events, partnerships, communication)
- faculty and staff development (development opportunities)

The Sustainability Assessment Questionnaire of the University Leaders for a Sustainable Future (ULSF n.d.) can – according to Beringer (2007, p. 455) – be seen as a comprehensive approach to a definition of sustainability in higher education. The themes analysed here comprise:
- incorporation of sustainability in all disciplines, liberal arts and professional education
- integration in faculty and student research
- reduction of the ecological footprint of operational activities
- integration of sustainability in hiring, tenure and promotion systems (rewards and development of staff)
- outreach and partnerships
- student opportunities (internships, job placements, representation in sustainability councils, student groups)
- written institutional commitment (position for sustainability tasks, public events)

Both approaches differ from the results of the analysis of the declarations in mainly one point, which is the explicit consideration of students as part of the academia. While students are rather seen as addressees of educational and awareness raising activities in the declarations, here they are considered as participating individuals who actively want to shape an IHE’s sustainability profile (in student groups and sustainability councils) and who want to live in a sustainable environment (university as a ‘life world’). One might criticize this lack of participatory aspects (not only for students but for staff, as well) in university declarations especially against the background of the discourse on the importance of participation for a sustainable development. The Agenda 21, the UN plan of action for a sustainable development adopted at the Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, puts emphasis on the importance of participation in several parts of the document (see, e.g., preamble, chapters 8 and 24, 25 and 28 in UNCED 1992). Of special interest for the field of this study is chapter 36 on “Promoting education, public awareness and training” where it is stated that participation of students and staff is needed in the development of plans for environmental work (paragraph 36.5.e).

According to Clugston and Calder (1999, p. 37) a participatory process of the university development is a critical condition of the success of sustainability initiatives at IHE. Adomßent, Godemann and Michelsen (2007, p. 392) state:

“Communication and participation are key principles for the implementation of the idea of sustainability in the university context; the task is to raise the issue of the development process towards a sustainable university, to discuss it and develop common practical steps towards its realisation.”

Herz (2000, p. 38) criticizes that the aspect of participation of students and staff in a sustainable development of the institution is missing in the Copernicus charter. After the analyses of four other declarations it is possible to extend this legitimate criticism to these declarations as well.

2.3 Defining themes of sustainable development at IHE

The discussion above has shown that there are good reasons to add the theme “participation of the university community” to the nine broad themes that resulted from the analysis of the university declarations. A high number of examples for participation at many IHE supported this approach. As a result, the ten analyzed themes of sustainability at IHE are:

1. Institutional commitment
2. Sustainable operations
3. Emphasis on ethical obligations
4. Research on sustainable development
5. Environmental literacy and awareness (students, staff and public at large)
6. Interdisciplinarity of research and education
7. Inter-university cooperation and networking
8. Knowledge transfer and partnerships with other sectors
9. Sustainability communication
10. Participation of the university community

Based on these categories the search for good practice examples was conducted, the results of which are presented in the next chapter.
3 Good practice of sustainability at IHE

3.1 Institutional commitment

In all five declarations on sustainable development in the higher education sector, institutional commitment is given a high priority. The Copernicus Charter points out that “universities shall demonstrate real commitment to the principle and practice of environmental protection and sustainable development within the academic milieu” (CRE-Copernicus 1994, principle 1). Similarly, the Halifax Declaration includes an “ongoing commitment to the principle and practice of sustainable development” (UNESCO 1991, point 1). In the Talloires Declaration it is stated that universities have to “set an example of environmental responsibility by establishing institutional ecology policies and practices” (ULSF 1990, point 5) and in the Swansea Declaration one can find a call for a review of universities’ operations in order to “reflect best sustainable development practices” (UNESCO 1993b, point 6). Finally, the Kyoto Declaration, being based on the language of former declarations, points to an “institutional commitment” and “sustainable consumptions practices” (UNESCO 1993a, points 1 and 2).

An institutional commitment as a basis for an environmental or sustainability management can be made through a policy statement or guidelines (Creighton 1998, p. 11; Clugston 1999, p. 14; Leal Filho 1999, p. 29). At universities in Germany and the UK we can find different ways of commitment to sustainable development which can be classified as follows:

- Sustainability policy
- Environmental policy with emphasis on sustainable development
- Environmental policy with “classical” environmental focus
- Development of a sustainability or environmental profile

a) Sustainability policies

A sustainability policy is a document that contains the organisations’ commitment to sustainable development. As some of the environmental policy documents closely relate to sustainable development, only documents which contain the word “sustainability” or “sustainable development” in their title were chosen for this category.

In the UK a number of universities have adopted a sustainability policy: the Leeds Metropolitan University, the Sheffield Hallam University as well as the Universities of Edinburgh, Gloucestershire, Plymouth, St. Andrews, Stirling, Sunderland and Sussex. Among the IHE in Germany that have adopted a sustainability policy are the Catholic Academy in Bavaria, the University of Applied Sciences Bremen and the University of Lüneburg.

In its “Environmental and Sustainability Policy” the University of Applied Sciences Bremen states:

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7 Names of IHE were translated in the text. References in the text and in the list of literature are given in the original language.
“Sustainability at the University of Applied Sciences Bremen means that research, education and university operations considers social, economic and ecological aspects in a manner that protects the natural living conditions, ensures the sustainable use of natural resources and safeguards a dignified life for all humans even in the future.” (Hochschule Bremen n.d. a, own translation)

The University of Lüneburg has adopted sustainability guidelines which point out:

“The University bears responsibility towards its students, future decision makers, and its employees, to serve as a role model in the sense of sustainability in its task fulfilment and in the daily resource consumption. The University supports discourses on the idea of sustainability and promotes a broad commitment of all its groups and divisions in a university-wide sustainability-process.” (Universität Lüneburg n.d. a, own translation)

Two other examples from the UK might serve as an example for a commitment through a sustainability policy as well. In the sustainability policy of the Sheffield Hallam University it is stated:

“The University recognises its responsibility to ensure sound, environmentally and socially responsible, operational practice in all its activities. It recognises the need to ensure that the teaching and research undertaken by the University incorporates the concept of sustainable development and is committed continually to improve its environmental performance and role within the wider community on a cost-effective basis. It will take action to achieve its aims independently and in co-operation with others.” (Sheffield Hallam University 2003, point 2.1)

The sustainability policy document of the University of Plymouth contains the following statement:

“The University is committed to transforming itself from an institution characterized by significant areas of achievement and excellence in sustainability adherence and provision to an institution modeling university-wide achievement and excellence and, hence, positioned to make a significant contribution to national and international efforts to embed sustainability in higher education.” (University of Plymouth n.d. a, p. 3)

b) Environmental policy with emphasis on sustainable development

Environmental guidelines and policies can also closely relate to a sustainable development so that the intention of a commitment under the topic “environment” can be interpreted as a commitment to a sustainable development. Of the 49 investigated universities 29 had no sustainability policy, but a policy document named “environmental policy” or “environmental guidelines” or similar. A majority of these, namely 23 out of 29, related their policy to sustainable development (see appendix 1 for a list of these IHE). Good examples for this case are the TU8 Berlin that bases its environmental policy on the idea of sustainable development of the Brundtland-Report (TU Berlin 1997) or the University of Freiburg that states in its environmental guidelines that it “feels committed to the concept of sustainable development” (Universität Freiburg n.d. a, own translation).

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8 Technische Universität [technical university]
c) Environmental policy with “classical” environmental focus

Some universities have environmental policy documents that do not explicitly relate to the principle of sustainable development. Among these are, e.g., the University of Bielefeld, the FHW Berlin and the Queen's University Belfast that focus on “classical” environmental protection in their guidelines (Universität Bielefeld n.d. a; FHW Berlin n.d.; Queen’s University Belfast 2006).

d) Development of a sustainability or environmental profile

Yet another way to commit a university to a sustainable development is the development of a profile. In this case sustainability issues are implemented in day-to-day activities although the IHE has no (publicly available) sustainability or environmental policy. Examples for this case are the University of Oldenburg which develops a “sustainability profile” presenting its activities in research, education and cooperation on sustainable development in a document (“The sustainability profile of the University of Oldenburg – Coast – Energy – Human” [own translation]) (Universität Oldenburg 2007). The University of Kassel, calling itself an “environmental university”, has developed an environmental profile based on environment-related education, research, knowledge transfer and cooperation (Universität Kassel 2006). Although both universities obviously commit themselves to a sustainable development they do not have an environmental or sustainability policy (M Hölling 2008, pers. comm., 6 February; R Michels 2008, pers. comm., 21 February). Similarly, at the Universities of Göttingen and Hannover as well as at the Queen Margaret University in Edinburgh, projects on sustainable development are set into practice without an environmental or sustainability policy document as a basis (U Hoffmann 2008, pers. comm., 6 February; P Schmiedner 2008, pers. comm., 6 February; G Kelly 2008, pers. comm., 6 February). A sustainability or environmental profile can also be developed next to the commitment through a policy: the “Ecoverity” program of the University of Bradford (n.d. i) or the initiative “Sustainable University of Freiburg” (Universität Freiburg n.d. m) are examples of that.

Illustration: Mälardalen University is certified according to ISO 14001 since 1999 and has a Sustainability Policy since 2000. Since 2006 it has a Sustainability Steering Committee that runs the profiling efforts regarding sustainable development.

3.2 Sustainable operations

By far the most activities reported by IHE are projects for the reduction of negative environmental or social impacts. Most examples were found in the “ecological” dimension of sustainability. This can be explained by the chosen method, namely including universities that have adopted an environmental policy and not a specific sustainability policy. As most of these policies relate to a sustainable development (see chapter 3.1), one might conclude that sustainability is mostly interpreted as an improvement of environmental performance. Where universities reported on sustainability aspects in an integrative approach, examples from the “social” dimension were presented. The scope of projects and activities that are set into practice by IHE to improve environmental performance include a variety of different topics which will be presented in the following paragraphs.

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9 Fachhochschule fuer Wirtschaft [Berlin School of Economics]
3.2.1 Reduction of energy use

Attempts to reduce the energy consumption are based on the pillars of energy-efficient technology, projects that reduce the necessity to consume energy and a considerable number of measures on environmental awareness, such as energy saving hints or competitions. The latter will be presented in the chapter on environmental literacy and awareness. Many projects in this area were planned or are in process. A number of projects were very specific to the circumstances of the particular IHE so that they are not described here in further detail. Projects on energy-efficiency are mainly based on the state of the buildings (e.g. insulation of windows and walls, efficiency of currently installed lighting or heating system and other constructional aspects). Many universities reported on energy-efficient lighting systems or the installation of motion detectors.

Some very different examples might illustrate the broad variety of measure that can be undertaken by IHE. The University of Bielefeld replaced 420 traditional lighting bulbs of the stairs in 16 lecture halls with light emitting diodes (LED) and thereby it saves 80% electricity (Universität Bielefeld 2007, p. 24). Another measure is central building control systems which universities install in order to adjust heating, lighting and air conditioning systems. The University of Hannover has, among others, implemented such a system and has observed energy savings of 7.6 to 12.5% (Universität Hannover 2005, p. 25). The Universities of Lüneburg and Bielefeld provide examples of such central adjustments. In Bielefeld the university building was closed in December 2006 for the Christmas holidays and heating, air conditioning and lighting systems were shut down to a minimum leading to heat energy savings of 1.9% of a ten-year-average and electricity saving of 0.5% compared to December 2005 (Universität Bielefeld 2007, p. 8). In Lüneburg the heating system is shut down on weekends and between Christmas and new-year annually, leading to savings of 90 MWh (1% of the 2006 heating energy consumption) (Universität Lüneburg 2007a, p. 25).

As financial resources for investing in new energy efficient technology in order to improve environmental performance seem to be restricted, the TU Berlin demonstrates a possible solution to this problem. Several of its buildings are part of an energy contracting\(^\text{10}\), where a contractor has invested 1.6 million Euro in heating, lighting and controlling systems with the goal of energy savings of 20% and a proportionate back-payment of the cost reductions to the university (TU Berlin 2006, p. 29).

A part of electricity consumption in universities can be ascribed to the extended use of computers. Two examples illustrate efforts in this area: at the University of Salford there is an “off-as-standard” instead of an “on-as-standard” for public PCs. A drawback of this measure is that users that want to log in have to spend about 30 seconds more for every log-in but on the other hand considerable savings are expected (University of Salford 2007). The Queen Margaret University, Edinburgh, runs a thin client computer technology where software and hardware are stored centrally so that there is no need for single hard disks on every desk which reduces the need for ventilation which on its turn reduces energy consumption (Queen Margaret University n.d.).

\(^{10}\) Energy contracting can be defined as a contract between an energy provider (contractor) and its customer (energy consumer) which “comprises different forms of energy services with main emphasis being energy supply by use of energy saving procedures and efficient technologies” (Hirschl 2000, p. 3)
3.2.2 Renewable energy

As part of their energy management some IHE promote renewable energy. Whereas some IHE implemented own projects for the use of solar energy or biomass on their campuses, another approach is to choose an energy supplier that delivers sustainable energy.

Campus-based projects

a) Photovoltaics

Several IHE have put solar cells on their roofs. An outstanding initiative is the solar cell initiative of the University of Freiburg where solar cells with a maximum power of 550 kWp – an area of about 5,000 m² all together – are constructed on the roofs of the university. The program is financed with the help of an equity financing program of a regional energy provider. The university presents itself as a “Solar-Uni” and supports this initiative with the establishment of a professorship and a research centre for renewable energy and the development of a master program (Universität Freiburg n.d. l). Probably the oldest plant has been constructed at the University of Münster already in 1998. It has a maximum power of 40 kWp (Universität Münster n.d. a). The TU Dresden has built photovoltaic cells with a maximum power of 30 kWp in 2007 (TU Dresden 2006, p. 53). As part of the initiative “solar campus Kassel” the University of Kassel has constructed a solar plant in 2006 with a maximum power of 14.5 kWp and another one has been constructed in 2007 (Universität Kassel n.d. a). Other projects include that of the University of Osnabrück with an area of 460 m² and a maximum power of 22.5 kWp, the University of Applied Sciences Trier (19 kW), the University of Applied Sciences HAW Hamburg (15 kWp), the University of Lüneburg (7.5 kW), the Catholic Academy in Bavaria (6.7 kW) (Universität Osnabrück n.d. a; FH Trier 2004, p. 45; HAW Hamburg n.d. a, Solarprojekt Universität Lüneburg n.d.; Katholische Akademie in Bayern 2005, p. 16).

In the UK the University of Manchester has currently integrated photovoltaics in its new buildings – one of them being the second largest in Manchester (data missing, University of Manchester n.d. a). Photovoltaic panels are also installed at the University of Cambridge and at the University of Gloucestershire (no specific data, University of Cambridge n.d. a, p. 4; University of Gloucestershire n.d. a).

b) Solar heat

Where hot water is needed for laboratory purposes, sanitary arrangements or heating solar energy can be used to heat the water. The University of Osnabrück has installed thermophotovoltaic devices that heat the water for the biology and chemistry laboratories as well as for a sports centre (Universität Osnabrück 2006, p. 4). At the University of Applied Sciences Trier a similar solar thermal system provides hot water for different purposes (FH Trier 2004, p. 20).
c) Biomass

Two universities presented examples of energy supply by biomass. The TU Cottbus has installed a wood chips boiler for one of the campuses (TU Cottbus 2007, p. 88) and the Queen Margaret University in Edinburgh gets its heat from such a wood-fired power plant as well. A reduction of 75% of carbon dioxide emissions is expected compared to a gas-fired plant (Queen Margaret University n.d.).

Choice of energy supplier

Some universities intend to reduce their environmental impact by choosing an energy (electricity) supplier that delivers certificated environmentally sound electricity from renewable sources. This seems to be a specific topic for UK universities whereas no examples from Germany were found. A survey of People and Planet among IHE in the UK asked inter alia for the percentage of green energy the institutions order from their suppliers. 32 of the 105 respondents had a percentage of electricity from renewable energy sources of more than 15% (People and Planet 2007).

Both the University of Cambridge and the Oxford Brookes University state that 100% of their electricity comes from renewable energy sources (University of Cambridge n.d. a, p. 4; Oxford Brookes University n.d. a). Other universities with a remarkable high percentage of renewable electricity are the Leeds Metropolitan University (86%), the Anglia Ruskin University, Cambridge & Chelmsford, (85%) and the University of Hertfordshire (70%) (Leeds Metropolitan University 2003, p. 8; Anglia Ruskin University n.d. a; University of Hertfordshire n.d. a).

3.2.3 Carbon management

In order to reduce one of the negative aspects of energy consumption, the contribution to the greenhouse effect, some universities implemented a carbon management focusing on carbon dioxide as the most important greenhouse gas.

Carbon management plans can be found at the University of Hertfordshire which set a goal of a 20% reduction compared to 2005/06 for the following five years and supports this with a climate change campaign (University of Hertfordshire n.d. b). The University of Leeds has developed a Carbon Management Plan including a 10% reduction until 2010 compared to 2006 (University of Leeds n.d. a).

Nineteen universities in the UK, among them eight considered in this study, take part in the Higher Education Carbon Management program of the Carbon Trust, a private consulting company set up by the British government (Carbon Trust n.d.).

Besides this, off-setting an institution’s carbon dioxide emissions that can not be reduced (“carbon neutrality”) seems to become more important. This is done by an investment in projects that lead to lower greenhouse gas emissions.

In North America carbon neutrality is recently becoming a “critical aspect” of sustainability at IHE (Beringer 2007, p. 456). By February 8, 2008 the American College and University Presidents Climate Commitment had 489 signatories, committing their institutions to implement a carbon management plan which has to state a date for the achievement of carbon neutrality and implies a number of other actions to reduce the impact on the climate (ecoAmerica, Second Nature & AASHE 2008).
A few projects exist in the UK and Germany. The University of Manchester has offset the carbon dioxide emissions resulting from the organisation of an exhibition by planting 35 trees locally (University of Manchester n.d. b). At the University of Leeds the School of Geography has offset the carbon emissions of flights with the help of a carbon offset service provider and emissions resulting from gas heating are neutralized by a reforestation project (School of Geography n.d.). The Newcastle University, not being part of sample of this study, has launched a carbon neutral degree course (Newcastle University 2006). For every 100,000 pages printed at the Oxford Brookes University, a tree is planted in order to offset parts of carbon emissions in a project of the 'Ricoh Tree Dedication Programme'. By now 358 trees have been planted in Africa for the university (Oxford Brookes University n.d. b).

The University of Lüneburg has probably taken the most advanced step in this area. Starting with the organization of carbon neutral conferences, where carbon emission caused by transport and consumption of goods were calculated and set off, the university management has set the target to work carbon neutral until 2012 (Universität Lüneburg 2007a, pp. 26). As a first step, 1,209 tons of carbon dioxide that were emitted through heat and electricity production for the main campus of the university were set off in a project on the energy recovery of rice husks in India to produce electricity, helping to reduce the dependency on carbon-intensive fossil energy (Universität Lüneburg 2007b).

3.2.4 Water conservation

The conservation of water seems to be of a rather minor importance to IHE compared to the conservation of energy or other environmental topics. Measures include mostly hints for staff and students on how to conserve water (see chapter 3.5.2). However, another reason for not reporting on water conservation might be the fact that measures have been taken long time ago and therefore do not appear in recent reports. Some technical measures are implemented in lavatory systems. A widely found example is water-saving toilet-flushes (e.g., FH Trier 2004, p. 47; HAW Hamburg 2002, p. 17; Oxford Brookes University n.d. b; TU Berlin 2006, p. 31). Some IHE have installed water-less urinals which work completely without water (Universität Lüneburg 2007a, p. 23; HAW Hamburg 2002, p. 16; Kingston University n.d. a).

At some IHE rain water captured on roofs of the buildings replaces drinking water for toilet flushing (FH Trier 2004, p. 47; TU Cottbus 2007, p. 98; Universität Osnabrück n.d. b), for cooling purposes (Universität Bielefeld 2005, p. 4) or for the irrigation of parks on the campus (Universität Hannover 2005, p. 18).

3.2.5 Waste recycling

Waste separation seems to develop to a good standard of sustainability at IHE as a lot of universities have introduced it. Like the water conservation topic some universities might not report on it as such measures may have been introduced earlier. A problem that has been observed is that these systems may have been introduced but not used regularly or accurately (cf. FHW Berlin 2006, p. 34). This is the reason for information campaigns and recycling guides that try to promote waste separation on campuses. Examples of comprehensive
recycling guides can be found, amongst many others, at the University of St. Andrews and the University of the West of England, Bristol, where detailed information is given for “How to recycle...” up to twenty different types of waste, from clinical waste over bicycles and tires to fluorescent lamps and fridges (University of St. Andrews n.d. a; University of the West of England n.d. a). In Germany, a country with a long tradition of waste recycling, the University of Freiburg presents a comprehensive “waste alphabet” giving advice on how to sort numerous types of waste from A to Z (Universität Freiburg n.d. b).

Some effort is made to collect special kinds of waste besides the normal separation of packaging waste, biodegradable or hazardous waste. Some examples might illustrate the variety of these.

*Illustration: Mälardalen University is certified according to ISO 14001 since 1999.*

a) CD recycling

Old and redundant CD-ROMs that usually would be sorted as household waste are collected for a material recycling at some universities (TU Berlin 2005, p. 33; Universität Freiburg n.d. c; Universität Osnabrück 2004, p. 9).

b) Furniture

Office furniture that is no longer in use can also be recycled. The University of Osnabrück offers an example for an environmentally sound recycling connected with a beneficial purpose: since 2002 old office furniture is given to a charity shop that provides furniture to deprived people at no or low cost (Universität Osnabrück 2004, p. 9). At other universities a furniture exchange has been developed. At the University of Freiburg, departments can offer old furniture, hardware and laboratory equipment at an exchange in the intranet, offering the possibility to sell redundant equipment on the one hand and giving other departments the possibility to buy relatively cheap second-hand equipment (Universität Freiburg n.d. d). At the University of St. Andrews the environmental team offers second-hand furniture in an Internet database for free to departments and even to staff for private use (University of St. Andrews n.d. b). A similar approach has been found at the University of Stirling (University of Stirling n.d., p. 5).

c) Toner cartridges

IHE make some effort to collect empty cartridges of copiers and printers. These are collected and recycled by service providers, mostly in connection with a charitable donation to a special organisation. Examples include the University of Freiburg which gives away the revenues to the Welthungerhilfe, the Kingston University (to ActionAid), the University of Salford (to the University’s children’s cancer charity) and the Liverpool John Moores University (to several charity organizations) (Universität Freiburg n.d. e; Kingston University n.d. b; University of Salford 2007; Liverpool John Moores University n.d. a).

*Illustration: Mälardalen University is certified according to ISO 14001 since 1999.*
d) Mobile phones

Yet another way to combine environmental effects with charity purposes is the recycling of mobile phones the revenues of which are also given away to charity organisations. This is done by e.g. the University of the West of England and the Kingston University which give the phones away to ActionAid, the Liverpool John Moores University (to several charity organizations) and the Oxford Brookes University (University of the West of England n.d. a; Kingston University n.d. b; Liverpool John Moores University n.d. a; Oxford Brookes University n.d. c).

e) Christmas cards

As a special form of waste paper collection the University of Sunderland encouraged their employees to bring Christmas cards to special recycling stations. Together with the Woodland Trust, a UK woodland conservation charity, the university collected 48 bags of Christmas cards after the season in 2006 – part of 82 million Christmas cards that have been collected in this campaign (Woodland Trust 2006; University of Sunderland n.d. a).

f) Chemicals

For the use of chemicals in different departments of a university the University of Göttingen provides a good practice. It has initiated an exchange for redundant chemicals that might be used by other departments. This reduces costs and environmental impact through waste minimisation (Universität Göttingen n.d. a).

3.2.6 Procurement

To review the procurement concerning ecological and social impacts is on the agenda of many universities. For example, the procurement strategy of the University of Manchester states: “Procurement should be undertaken in a fair, transparent and accountable manner, and with regard to academic efficiency and corporate social responsibility” (University of Manchester n.d. b).

The decentral organization of universities is seen as one of the barriers to change an IHE in a sustainable way (Barlett & Chase 2004, p. 10). Where purchasing activities are organized decentrally a procurement policy seems to be hard to monitor. As such procurement policies are often not compulsory, procurement offices or environmental teams try to inform about possibilities to buy green, sustainable and/or fair, as well as the consequences and advantages of sustainable procurement. Examples can be found at the University of Hertfordshire where a sustainable purchasing guidance informs in detail about different eco- and fair trade labels (University of Hertfordshire n.d. c). The sustainable procurement guide of the University of Cambridge provides information about life-time costing and detailed information on what departments should consider when they purchase office equipment (University of Cambridge n.d. b). At the University of Manchester a supplier’s responsibility has been introduced. Suppliers have to proof they have an environmental management according to ISO 14001, furniture suppliers have to pledge to use wood from sustainable sources only and all contracted suppliers had to answer to a questionnaire asking for equality and diversity issues at these companies (University of Manchester n.d. b).
While these guideline are very general and include a huge variety of goods being purchased for all purposes, some examples might illustrate the implications and consequences of a sustainable procurement.

a) Paper

There is a considerable number of examples of IHE that have introduced the use of recycled paper for printers and copiers. As using recycled paper has a much less ecological impact compared to paper produced from fresh fibres (IFEU 2006, p. 3) and because paper is in a way visualising the “output” of an academic institution (academic theses and reports, compendia, lecture notes, administration office paper) and thereby also visualising the environmental impact, a lot of universities focus on this topic. Some IHE have achieved remarkably high percentages of recycled paper. In line with the program “Sustainable University Freiburg” the university management has prescribed centrally that recycled paper has to be used for office purposes and in printers on the campus. In order to prevent or overcome retentions against recycled paper, a type of paper with a very high whiteness (90%) was chosen which is about 10% cheaper than paper from fresh fibres as well. The university has reached a percentage of 80% recycled paper of all paper by September 2007 (Universität Freiburg n.d. f). Other examples come from the University of Osnabrück (75%), the FHW Berlin (80%) and the University of the West of England (80%) (Universität Osnabrück 2006, p. 5; FHW Berlin 2006, p. 35; University of the West of England n.d. b).

The central print shop and the central administration of the TU Berlin have a rate of recycled paper of 80% together (TU Berlin 2005, p. 38). 91% of the paper bought by the University of Bielefeld is recycled, reaching probably the highest rate in Germany (Universität Bielefeld 2007, p. 6). The University of Hertfordshire has announced a complete switch to recycling paper in all printers and copiers, calling this the “recycling revolution” and stating the following as a motivation for this measure:

“For recycling to make economic sense we need to buy recycled products as well as recycle our waste. If we don’t there won’t be a market for recycled goods. You’re not truly recycling unless you are buying recycled!” (University of Hertfordshire n.d. d)

Two examples from outside the focal area of this study might complete this section. The first one comes from Austria, where the University of Natural Resources and Applied Life Sciences, Vienna, has reached a remarkable rate of recycling paper usage of 98% (BOKU Wien 2007, p. 25). The second one comes from Switzerland. The ETH Zürich has a target to raise the percentage of recycled paper to 50%. Where white paper is preferred for some purposes this should stem from sustainable sources: the goal is to use 100% FSC-certified paper for this fraction, having reached 41.7% in 2006 (ETH Zürich 2006, p. 4). The Forest Stewardship Council (FSC) is an international non-profit-organization that promotes “environmentally appropriate, socially beneficial, and economically viable management of the world’s forests” (Forest Stewardship Council n.d.). FSC certified paper stems from such sustainably managed forests.

b) Environmentally sound cleaning agents

At the University of Freiburg a project on environmentally benign cleaning agents was carried out. By September 2007, 68% of all cleaning agents were marked environmentally

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11 Eidgenössische Technische Hochschule [Swiss Federal Insitute of Technology]
friendly, i.e. without artificial scents and other redundant, possibly allergenic substances of content and with tensides coming from renewable resources ( Universität Freiburg n.d. g). At the University of Osnabrück the invitation to bid for the cleaning services of the university was upgraded with ecological criteria for cleaning agents as well ( Universität Osnabrück 2004, p. 12).

3.2.7 Food and drinks

a) Organic and regional food

At some IHE staff and students have the possibility to buy organic and regional food in a university restaurant or cafeteria. Being certified according to the EU-Eco-regulation, the student services at the University of Oldenburg prepares a large part of the food in its cafeteria with organic and regional ingredients ( Universität Oldenburg 2007, p. 24). At the University of Kassel organic ingredients have been used for more than 20 years now on one of the campuses. Since 1994 a complete organic meal and several other products are offered at other campuses as well ( Universität Kassel n.d. b). While at the University of Lüneburg one complete organic meal is offered every day, the restaurant at the TU Dresden offers one every week ( Universität Lüneburg 2007a, p. 15; TU Dresden 2007, p. 18). The Catholic Academy in Bavaria provides detailed information about the origin of the food consumed at the academy. According to this, 30% of the dairy products come from the region and 70% is organic. Vegetables and drinks are mostly regional (70% resp. 80%) ( Katholische Akademie in Bayern 2005, p. 19). At the University of the West of England a “Food for Life” project is taking place, where the university is sourcing local and organic food for its restaurants. Additionally, a monthly farmer’s market with local and organic food is held on the campus to reach students and staff ( University of the West of England 2007, p. 12).

Illustration: Mälardalen University has free tap water around campus and in the restaurants.

b) Fair trade products

The idea of fair trade\textsuperscript{12} guarantees farmers a minimum price on their products, provides them with a premium for social or environmental development projects so that farmers and estate workers can improve their life sustainably. Although these products are not necessarily organic, some environmental standards are required by the Fairtrade Foundation ( Fairtrade Foundation n.d. a).

Buying fair trade products seems to be a trend in universities in the UK. A remarkable number of over 60 universities (including 20 of the 27 universities considered in this study) have reached the status of a “Fairtrade university” ( Fairtrade Foundation n.d. b). In order to achieve this status, a university has to meet the following five goals ( Fairtrade Foundation n.d. b):

- “The Student Union and the university authorities both create a Fairtrade policy incorporating these five goals.
- Fairtrade foods are made available for sale in all campus shops. Fairtrade foods are used in all cafés/restaurants/bars on campus. Where this is not possible, there is a

\textsuperscript{12} In the following, „fair trade“ describes the idea, while „Fairtrade“ is the proper name/brand of the Fairtrade foundation.
commitment to begin to use Fairtrade foods in these establishments as soon as it becomes possible to do so.

• Fairtrade foods (for example, coffee and tea) are served at all meetings hosted by the university and the SU, and are served in all university and SU management offices.
• There is a commitment to campaign for increased Fairtrade consumption on campus.
• Set up a Fairtrade Steering Group.”

An example of such a fair trade policy comes from the Oxford Brookes University which by its own account has become the first Fairtrade University in the world in 2003 and states:

“Oxford Brookes University and Oxford Brookes Student Union assign great importance to the University's role within the international community, and therefore commit to supporting, using and promoting Fairtrade.” (Oxford Brookes University n.d.)

In its fair trade report the Oxford Brookes University informs about the progress to promote fair trade. According to this, fair trade products account for 12% of all products sold in catering shop in the university. In the Student’s Union shops 58% of coffee and tea are fair trade (Oxford Brookes University 2006, pp. 4). The University of Manchester provides numbers that illustrate the results of its fair trade policy. Every year the fair trade consumption on the university campus adds up to the following (University of Manchester n.d. c):

• 200,000 cups of Fairtrade tea
• 850,000 Fairtrade sugar sachets
• 75,000 bananas
• 1,000,000 cups of Fairtrade coffee
• 90,000 cups of Fairtrade hot chocolate
• 60,000 bottles of Fairtrade fruit juice
• 15,000 Fairtrade choc bars

In order to promote fair trade, some universities organize “Fairtrade Fortnights” with different events on the idea of fair trade. Farmers come to the University and talk about how fair trade changes their lives, fair trade products are offered at lower prices or as free samples and concerts are organized (Oxford Brookes University n.d. e; Sheffield Hallam University 2006, p. 5; Kingston University n.d. c; Anglia Ruskin University n.d. b).

The Queen’s University Belfast runs an own website for the promotion of fair trade where events, facts and figures and the fair trade policies can be found (Queen’s University Belfast n.d. a). At the University of Sunderland the commitment to fair trade does not only include food and drinks but also sport equipment. Fairtrade footballs and basketballs have been purchased (University of Sunderland n.d. b)

3.2.8 Transport

Working and studying at a IHE induces traffic of staff and students. As the combustion of fossil fuels by cars or airplanes generates considerable amounts of greenhouse gases, more sustainable solutions have to be found which include the promotion of public transport,
cycling and walking. IHE are very active in this field which can be seen in the following sections.

a) Travel surveys and travel management

As part of their travel management or travel plans some IHE have conducted travel surveys among staff and/or students in order to gain insight into their travel behavior and for being able to implement appropriate measures in order to reduce the environmental impact of travelling. Examples for such surveys can be found at the University of St. Andrews (2006), where staff was among other things asked for measures that would encourage them to travel more environmentally friendly (e.g., better cycle paths, improved public transport). Based on the results of their travel survey the Liverpool John Moores University (2005) developed detailed ideas and measures on how to increase the percentage of staff and students that are walking, cycling or commuting with public transport. Other examples for a travel management can be found at the Queen’s University Belfast (n.d. b), the Anglia Ruskin University (n.d. c) and the University of Bradford (n.d. a). Such measures overlap with another category of how IHE work on sustainable development: many of these activities in sustainable travelling require an increased environmental awareness of the addressees, staff and students. These ideas will be described later in chapter 3.5.2.

b) Carpools/lift shares

Several universities offer a car sharing scheme in order to promote lift share among their staff while they commute to work with their own car. On the UK web page www.liftshare.org people can register in order to find possible passengers for building a lift share. This platform is for instance promoted by the University of Cardiff (n.d.), the University of St. Andrews (n.d. c) and the University of Sunderland (n.d. c). The Oxford Brookes University (n.d. f) provides access to another, similar service called 234car (www.234car.com). Others suggest a membership in local or regional car sharing schemes, like the University of Glamorgan (n.d.) to “Glamcarshare” or the Leeds Metropolitan University (n.d. a) to “CareshareLeeds” or provide an own university-wide car sharing scheme (Universität Göttingen n.d. b; University of Bradford n.d. b).

c) Car clubs

The University of Leeds is member of a car club (to rent cars) and offers to its staff members to use this service for work purposes (University of Leeds n.d. b), similarly the University of Osnabrück offers such a service (Universität Osnabrück 2004, p. 13) and the Leeds Metropolitan University runs its own car club, offering it to staff for private and work use (Leeds Metropolitan University n.d. b).

d) Public transport

The University of Bielefeld offers a job ticket for the regional public transport at a reduced price to its staff, of which more than 2000 staff members make use (Universität Bielefeld 2007, p. 18). A similar ticket can be found at the Sheffield Hallam University (2006, p. 3). What the universities of Bielefeld and report concerning tickets for the regional public transport for students (Universität Bielefeld 2007, p. 18; Universität Lüneburg 2007a, p. 27), might be called a standard in Germany: students normally can use public transport in the city.
and the surrounding region for a reduced price or at no cost during the whole semester. Especially in the UK interest-free loans to buy a season ticket are offered (Liverpool John Moores University n.d. b; Oxford Brookes University n.d. g; Queen’s University Belfast n.d. c; University of Cambridge n.d., p. 5).

Illustration: Mälardalen University offers its students and faculty free train rides between the campus cities of Eskilstuna and Västerås.

e) Bicycle use

Staff and students are encouraged to use the bicycle to go to work in several ways. At the University of Osnabrück a car-free day is promoted by the university president every day within the nationwide “car-free university day” (Universität Osnabrück 2004, p. 13). At the HAW Hamburg the environmental committee has elaborated a map with bicycle paths to the locations of the university from different starting points (HAW Hamburg 2002, p. 22). Similarly, the Swansea University has published an alternative travel map which does not only contain bicycle paths but also information on public transport in Swansea (Swansea University n.d. a). The Sheffield Hallam University offered a financial incentive to its staff: employees were able to buy a bicycle on a 12 month sacrifice scheme, offering them discounts to up to 40% on a bike (Sheffield Hallam University 2006, p. 3). Many universities in the UK offer bicycle loan schemes to employees and sometimes to students. Interest-free loans are given to those who want to buy a bicycle at the University of Gloucestershire (n.d. b), Liverpool John Moores University (n.d. b); Oxford Brookes University (n.d. g); Queen’s University Belfast (n.d. d); University of Cambridge (n.d., p. 5); University of Leeds (n.d. c).

f) Walking

The Oxford Brookes University has introduced a “walk to work” program with maps for possible routes from different starting points to the campus. This program emphasizes especially the health effects of walking (Oxford Brookes University n.d. h).

g) Reducing travel demand

Encouraging people to use new media like video conferences or remote access systems which allow employees to have access to their files when they work at home reduces the demand for travel. The University of Bradford has such measures in its Smart Move Travel Plan (University of Bradford n.d. c).

h) Reduction of fossil fuel use

Where own vehicles are maintained by an IHE or are closely connected to the institution, the reduction of fossil fuel consumption of these is appropriate in order to reduce the environmental impact. The University of Manchester offers a bus service that connects two campuses. Together with a local bus operator the university has decided to fuel the busses

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13 Hochschule fuer angewandte Wissenschaften [University of Applied Sciences]
with bio diesel which emits less carbon dioxide than fossil fuels (University of Manchester n.d. d). Other examples come from outside the focal area the ETH Zürich and the University of Hong Kong which have set the goal to reduce the fuel consumption with the help of hybrid cars (ETH Zürich 2006, p. 4; University of Hong Kong 2005, p. 15).

3.2.9 Biodiversity and nature conservation

Some IHE have an own biodiversity management for their campuses and reported on nature conservation measures. Especially where campuses are large and include biotopes, such information is available.

At the University of Hertfordshire the university environment team is responsible for the management of a four hectare woodland ecosystem and wildflower meadows on the campus. In addition to that the team provides information on the biodiversity on the campus (University of Hertfordshire n.d. e). A biodiversity management is also carried out at the Oxford Brookes University where native trees and shrubs are planted regularly, part of them as a measure to offset carbon dioxide emissions (University of Oxford Brookes n.d. i). The Kingston University and the Queen Margaret University also have a biodiversity action plan for ecosystems on their campuses (Kingston University n.d. d; Queen Margaret University n.d.). Owning a large campus with a park-like landscape, the University of Sussex has its own management for old trees, collects data on wild orchids and works on a student garden project that will allow students to produce their own vegetables and fruits and to create a recreation area (University of Sussex n.d. b). The Leeds Metropolitan University owns large areas of land, including 94 hectares of extensive parkland and woodland for which a detailed habitat action plan has been worked out (Leeds Metropolitan University 2005). An in-depth report on biodiversity on the campuses at the University of Plymouth was elaborated, including management opportunities (Shepherd n.d.).

The University of Applied Sciences Trier provides an example for nature conservation on a campus which is rather small and does not include large areas of nature conservation interest. Ten percent of the roofage is covered with a roof greening and green spaces are only managed extensively with two cuts per year (FH Trier 2004, p. 36).

Two examples from Asia illustrate that sustainability management is a contextual matter and does not necessarily have to be similar in different countries with different circumstances. Universities in Hong-Kong have to fight against disease vectors like Dengue fever-carrying mosquitoes on their campus. The University of Hong Kong applies pesticides with a lower environmental impact (2005, p. 18). The Chinese University of Hong Kong uses self-made biological pesticides and places ovitraps to lure mosquitoes to lay eggs where they can easily be removed (Chinese University of Hong Kong n.d. a & b).

3.2.10 Comprehensive projects

a) Sustainable events

As part of a sustainability management IHE try to arrange “sustainable” or “green” meetings. As described above, the University of Manchester has offset the carbon emissions of an exhibition. A more comprehensive approach is chosen by the University of the West of England where events are held in energy efficient buildings, waste recycling is carried out and local, organic food is served (2007, p. 14). At the University of Lüneburg the carbon emissions of the conference “Meeting the future” in 2006 were offset. Additionally, under the slogan “sustainable conference”, different environmental and social aspects were considered.
For example, the catering came from a company that employs people with handicap or difficult social background, the food was organic, mostly regional and fair traded (DNW & CSM 2006).

Illustration: Mälardalen University has a yearly Sustainability Day for students, faculty and employees.

b) Sustainable construction

Where new campus buildings have to be constructed, IHE can set a good example in sustainable construction standards. Examples for this can be found at the Queen Margaret University in Edinburgh where the new campus has been assessed “excellent” according to the BREEAM standard (Building Research Establishment’s Environmental Assessment Method, www.breeam.org). The new building has a lot of features which have been described above such as high energy-efficient design, maximising daylight and natural ventilation, intelligent lighting systems, rain-water drainage systems, a biodiversity management of the surrounding park sites (Queen Margaret University n.d.). The University of Cambridge has constructed three new buildings according to its building policy that strives for an “excellent” or “very good” grade in the BREEAM assessment (University of Cambridge n.d., p. 3). Similarly, the University of Hertfordshire considers the BREEAM standard for new buildings and won a price for the sustainable construction of a new campus building by using FSC timber from sustainable forestry, water saving systems, solar control and natural ventilation (University of Hertfordshire n.d. f).

The University of Applied Sciences Zittau/Görlitz has developed an own declaration on sustainable construction for new buildings and rebuilding. A new teaching and laboratory building has been constructed by taking this declaration into account, e.g. by building a geothermal heat pump (Hochschule Zittau/Görlitz n.d. a).

c) Sustainable residence halls

In the UK some universities have the responsibility for bedrooms and residence halls for students. Two universities reported on comprehensive approaches to reduce the environmental impact of these buildings. Measures at the University of Manchester include decentralised heating systems, high efficiency lighting systems, water saving measures and recycling facilities (University of Manchester n.d. e). At the University of St. Andrews the student halls have been certified according to the Green Tourism Business Scheme Gold Award because they serve as hotels during the summer vacation and fulfil environmental requirements (University of St. Andrews n.d. d).

3.2.11 Funding of sustainable development

Most of the IHE do not make a statement on how sustainable development of their institution is financed. The ETH Zürich provides an example of such a funding. The so-called “Umweltbeitrag” [environmental share] accounts for 0.5 % of the building budget and is reserved for the realization of environmental projects that increase energy efficiency or reduce resource consumption such as the building of photovoltaic cells, waste heat recovery, the implementation of a new lighting system or the purchasing of two hybrid cars (ETH Zürich n.d. a).
3.2.12 Social aspects

One might say that social aspects of a sustainable development are not in the focus of IHE. Where comprehensive sustainability reports were published some examples for improvement of social relations could be found. In other cases, IHE refer to a sustainable development emphasizing ecological sustainability. The small number of results is also due to the method of research. Where the search for sustainability gave no results, the environmental management pages were analysed.

a) Work-life balance and equal opportunities for women

A fair work-life balance for staff and students is one of the social topics that are dealt with at IHE. The goal to create equal opportunities for women and men is for instance promoted by offering child care facilities at the university. Together with the Student Union, the University of Bremen offers a student-run “in-case-of-need” day care for children during the lectures (Universität Bremen 2005, p. 59). During the school holidays the University of Bremen offers activities for children when semester and holiday dates are overlapping (Universität Bremen 2005, p. 58). Similar projects can be found at the University of Lüneburg (2007a, p. 16). The University of Graz and the TU Graz in Austria both offer a regular childcare at reduced prices for all members of the universities (Universität Graz 2005, p. 46; TU Graz 2006, p. 28).

As part of the salary the staff of the University of the West of England can get tax-free childcare vouchers which reduces the costs of childcare (University of the West of England 2007, p. 13).

At some IHE there are special efforts to support female researchers. At the TU Graz, scientists that are in a parental leave can meet for a regulars’ table to stay in contact with other researchers while the university provides babysitters for this time (TU Graz 2006, p. 29). The University of Graz has developed a monetary incentive scheme for the promotion of female researchers: three of the faculties that have been successful in promoting new female researchers (dissertations, postdoctoral theses, appointments to professorships) in the last three years will get an additional part of the university’s budget (Universität Graz 2005, p. 39). The University of Osnabrück (2004, p. 20) has a program to promote female researchers. As part of the plan a part of the budget is used to provide scholarships to female researchers.

Illustration: Mälardalen University has a comprehensive equal opportunity program and appointed equality teachers and professors.

b) Anti-discrimination and conflict management

The University of Bremen has implemented a contact point that works against discrimination and violence. It offers conflict mediation, coaching, advice and supervision as well as lectures and workshops on different conflict themes (Universität Bremen 2005, pp. 74). The Sheffield Hallam University works on the reduction of disturbances caused by a minority of students in the community. Training sessions and campaigns are run as well as round tables with residents (Sheffield Hallam University 2006, p. 4).
c) Health

One of the measures to promote health is the organization of a “health day” where students and staff are informed about different health topics and encouraged to think about health aspects in their working life, different institutions dealing with health in the university present their work, presentations and workshops are held and healthy food can be tasted. Such events are regularly organized at the University of Bremen (2005, p. 76), the University of Lüneburg (2007a, p. 15) and the University of Hannover (2005, p. 24). A “Feel Good February” including 45 events raising students’ awareness of mental, sexual and public health took place at the University of the West of England (2007, p. 14).

The University of Lüneburg offers constitutional sport to staff within the university sport program. Employees are allowed to spend one hour per week during their working time in a free sport program that helps to prevent health problems (Universität Lüneburg 2007a, p. 14). The University of the West of England promotes healthy food in the restaurants (organic, free of additives, salad bars) and at vending machines (healthy snacks available) (University of the West of England 2007, p. 14).

Another measure to promote a healthy working place is to ensure a smoke-free working place. Before smoking in public buildings was forbidden in most of the federal states in Germany some IHE promoted non-smoker protection by forbidding smoking in the university buildings (TU Berlin 2006, p. 38; Universität Lüneburg 2007a, p. 14).

The staff’s mental health is improved by a telephone helpline service at the University of the West of England where confidential advice is given in a broad range a problems (financial, personal, emotional) (University of the West of England 2007, p. 13).

d) Aid to handicapped people

At the University of the West of England a Disability Resource Centre provides help to disabled students and supports academic staff who work with disabled students (University of the West of England 2007, p. 14). Handicapped students at the University of Bremen get help from other students who are registered in an assistance pool and get paid by the university (Universität Bremen 2005, p. 78).

e) Charity

As stated above, some recycling efforts are connected to charitable purposes (toner cartridges and mobile phone recycling). Some other approaches have been mentioned in connection with a sustainable development of the IHE. The University of Manchester sells so-called “One Water” – bottled water that has the same price as conventional water but raises funds with parts of the profits in order to build roundabout wells in Africa offering people free access to water (University of Manchester n.d. c; www.onewater.org.uk). In addition to that, the University of Manchester also sells water via AquAid which raises money for Christian Aid (University of Manchester n.d. c; www.aquaid.co.uk).
The Sheffield Hallam University has organized a number of charity events and names the Marie Curie Cancer Care, Childline and Niger crisis as charities which have benefited from these collections (Sheffield Hallam University 2006, p. 5).

3.3 Emphasis on ethical obligations

The second broad theme that came up in declarations on sustainable development of the higher education sector is the emphasis on ethical obligations.

Sustainable development as a normative concept includes moral obligations – the definition of the WCED implies inter- and intragenerational justice (WCED 1987, pp. 43). Four of the five analysed declarations of IHE on sustainable development contain a paragraph mentioning ethical obligations explicitly. Universities should emphasise ethical obligations of the “present generation” (Halifax Declaration [UNESCO 1991], Swansea Declaration [UNESCO 1993b] and Copernicus Charter [CRE-Copernicus 1994]) or of the “university community” (Kyoto Declaration [UNESCO 1993a]). Whereas a majority of the analysed IHE point to a responsibility towards society and base their engagement to sustainable development on that, only a few IHE mention ethical questions emphatically in their policy statements. These are the Universities of Edinburgh and Plymouth and the University of Applied Sciences Trier. In its sustainability policy the University of Edinburgh points out that it intends to “expose all students to social, ecological and ethical stewardship” (University of Edinburgh 2000). The University of Plymouth responds to an “increasing emphasis on sustainability literacy and ethics” by integrating these topics in the curriculum (University of Plymouth n.d.). At the University of Applied Sciences Trier the “environmental campus” Birkenfeld has environmental guidelines which state that the analysis of environmental ethical questions is integrated in the education of all students (FH Trier n.d.).

Environmental ethical questions might be introduced into education within special programs or in a general studies module although it is not stated as a special goal in policy documents. As such courses were not especially mentioned by IHE in their communication on sustainability, and a full analysis of courses and programs could not be conducted, fully answering the question of how and to which extent IHE emphasise ethical obligations would go far beyond the scope of this study.

3.4 Research on sustainable development

Encouraging research on sustainable development is on the agenda of four of the five analyzed university declarations on sustainable development, and many IHE report on their research activities in this field. It is hard to define what research on sustainable development is and how one can draw a line. How does research on the social or economic dimension look like? Shall purely environmental research be excluded from this definition although it may contribute to the understanding of an ecological sustainability? A separate study on research on sustainable development could be done – there is enough data to analyse. In order to exemplify sustainable development of IHE the following section will give some insight in research activities without claiming to give a full picture. The focus will be on universities that present an analysis of sustainability aspects of their research and that have founded sustainability related research centres.
3.4.1 Analyses of sustainability and environmental aspects in research

The sustainability report of the University of Lüneburg (2007, pp. 32) includes a detailed list of all ongoing research projects in 2006 that are related to sustainable development (25 projects, the term “sustainable development” was mentioned in the title or in the project description) or environmental protection (23 projects). About one third (35%) of all projects financed by third-party-funds can therefore be counted as sustainability research projects, mostly in the field of education for sustainable development, sustainable management, technical environmental protection, sustainability and gender as well as communication and regional planning (Universität Lüneburg 2007a, p. 32).

The TU Berlin has analysed its research projects as well. In the environmental report 2006 it defines categories of ongoing research projects. These are: relating to environment (47 projects), relating to environment with reference to economic aspects (78), relating to environment with reference to social aspects (11), relating to environment with reference to economic and social aspects (43). More than one tenth (11.6%) of all ongoing projects of the TU Berlin fall into one of these categories, characterizing a growth trend in the last years (TU Berlin 2006, p. 15). At the University of Applied Sciences Bremen the number of projects relating to sustainability also increased steeply in the last years (2003: 41; 2005: 76) (Hochschule Bremen 2006, p. 12). Another indicator to measure sustainability research is used by the Göteborg University: 32 out of 265 PhD theses in 2006 (12.1%) were finished in the field of environment and sustainable development (Göteborg University 2006, p. 8).

In its environmental report of 2002 the University of Osnabrück presents a description of research (and education) related to environment and sustainability of each and every faculty of the university (Universität Osnabrück 2002, pp. 24). Similarly, the FHW Berlin presents research fields relating to sustainability of professorships all over the university in its environmental report (FHW Berlin 2006, pp. 17).

Among universities that have analysed their research relating to environmental aspects are the TU Cottbus which presents these projects in detail for faculties and professorships (TU Cottbus 2007, pp. 16). Similarly the University of Applied Sciences Bremen presents environmental research projects for every department (Hochschule Bremen n.d. b). Other similar inventories can be found at the University of Hannover (2004, pp. 10), as well as on the environmental research portals of the TU Dresden (n.d.), the University of Sussex (n.d. a), the Leeds Metropolitan University (n.d. c) and the University of Cambridge (n.d. c).

3.4.2 Research centres

Some IHE point to research centres they founded in order to concentrate and connect research on sustainable development.

At the University of Oldenburg the scientific centre COAST comprises sustainability related transdisciplinary research with focus on environmental modelling, marine research, sustainable management and regenerative energy and connects four departments of the university (Universität Oldenburg 2007, p. 7). At the University of St. Andrews the St. Andrews Sustainability Institute acts as an umbrella in order to connect research activities in the fields of environmental modelling, social and environmental accounting and environmental history (University of St. Andrews n.d. e). At the University of Leeds an Earth, Energy and Environment Interdisciplinary Institute has been founded, focusing on energy related questions of sustainability (University of Leeds n.d. d). Several other initiatives exist that can not be presented here in detail.
3.5 Environmental literacy and awareness

The theme “environmental literacy and awareness” was mentioned in all of the five declarations on sustainability of the higher education sector. As education is one of the main “outputs” of an IHE and as IHE are an important provider of educational services in the society the crucial role universities play is obvious. Whereas the declarations point to “environmental” literacy, the discussion in the educational sector developed from a classical environmental education to an education for sustainable development (cf. Sterling 2004, pp. 44) which comprises next to environmental issues other components such as ‘critical reflection’, ‘values clarification’ and ‘participative action research’ (Tilbury 2004, p. 101). In this chapter efforts are illustrated that reach beyond the traditional environmental focus, as well.

This theme comprises next to educational programs all the measures that increase knowledge and awareness of employees of IHE as well. Additionally some declarations refer to a knowledge transfer to the society, i.e. an increased environmental literacy “for all” (Talloires Declaration [ULSF 1990]) or “a better understanding on part of the society” (Halifax Declaration [UNESCO 1991]). As knowledge transfer is an own part of this report, such measures will be described later in chapter 3.8.

3.5.1 Sustainable development in the curriculum

a) Lecture series and study certificates

A way to impart knowledge on sustainable development to a broad range of students and staff as well as the interested public are optional lecture series and workshops as well as study certificates that can be studied next to a degree.

At the University of Plymouth the Centre for Sustainable Futures organises a “Wednesday seminar programme” where scientists from different disciplines give their view on sustainability which offers to students and staff an interdisciplinary perspective on sustainable development (University of Plymouth n.d. b). The Swansea University offers a “Living sustainably” course for interested students where they can learn something about biodiversity, renewable energy, sustainable communities, food, building, transport etc. The course includes field trips and guest lectures (Swansea University n.d. c). The Swansea University has also developed a Certificate of Higher Education in Sustainability including several modules (environmental art, tourism, management, global citizenship) (Swansea University n.d. d).

At the University of Osnabrück a lecture series called “Environment – Development – Peace” (own translation) is offered within which solutions to global problems are presented from different disciplines (Universität Osnabrück n.d. c). At the TU Dresden an interdisciplinary lecture series is offered regularly, covering topics from the field of environmental protection and sustainability (TU Dresden 2007, p. 6).

The “study program sustainability” (own translation) at the University of Lüneburg is open to all students and concentrates on different topics such as nourishment and urban spaces (Universität Lüneburg 2007a, p. 38).

Illustration: Mälardalen University is developing a course in sustainable development for all students.
b) Integration in study programs

Another way to educate for a sustainable development is the integration of sustainability themes into study programs. Examples for these approaches are manifold and can not be presented here completely.

Among universities that have analysed all of their study programs in regard to their relation to sustainable development is the TU Berlin. Of the 6,651 courses offered in the winter term 2005/06 and in the summer term 2006 472 were relating to sustainability or environment which accords to 6.8% of all courses (TU Berlin 2006, p. 16). The University of Osnabrück gives information about educational activities in its environmental report of 2002: every department presents its courses on sustainable development and environment there (Universität Osnabrück 2002, pp. 24). At the University of Lüneburg courses with a relation to sustainable development can be studied in 12 of 46 study programs that where offered in the winter term 2006/07 (Universität Lüneburg 2007a, p. 39). A new study model at this university includes a general studies module called “Science bears responsibility” (own translation) where all students are challenged with questions of sustainable development (Universität Lüneburg n.d. c). A similar approach is followed at the University of Applied Sciences Zittau/Görlitz: in a compulsory lecture series all students attend the course “Introduction to ecology and environmental protection” (own translation). In this course basic ecological knowledge is connected to technical, economic and social aspects of environmental protection and sustainability (Hochschule Zittau/Görlitz 2005, p. 11). The School of Environment and Development at the University of Manchester offers free choice courses in sustainable development to all students of the school (University of Manchester n.d. f). At the University of Oldenburg a module in sustainable development is open to all students in bachelor programs and serves as an interdisciplinary exchange platform (Universität Oldenburg 2007, p. 18). At the same university environmental and sustainability issues have been implemented in the teacher-training (Universität Oldenburg 2007, p. 17). At the FHW Berlin several efforts have been made to include environmental and social responsibility issues into business administration programs (FHW Berlin 2006, pp. 21). Students of chemistry at the University of Bremen are faced with the concept of sustainability in the laboratory: the university has – together with other universities – worked on a sustainable laboratory course in organic chemistry (Universität Bremen 2005, p. 43; www.oc-praktikum.de [available in English]).

c) Integration of sustainability aspects in the university calendar

Strongly connected with the provision of courses on sustainable development for a broad range of students is the “promotion” of these courses. Students can get to know about certain courses related to sustainable development and environmental issues with the help of university calendars that highlight these courses. This can be found in different forms at the following universities.

At the University of Kassel a separate catalogue within the university calendar contains all courses with a relation to the environment (Universität Kassel n.d. c). The University of Münster publishes a “green course catalogue” with courses on environment and sustainable development for every semester (Universität Münster n.d. c). Two other examples come from outside the focal area: In Austria, at the University of Graz the student association “oikos Graz – students for sustainable management and economics” has developed a course catalogue for the winter term 2005/06 which included more than 30 seminars, lectures and labs (Universität Graz 2005, p. 20). The Göteborg University has marked courses that are related to environment and/or sustainable development in the general university calendar (Göteborg University 2006, p. 6).
d) Study programs relating to sustainable development

Another way to educate for a sustainable development are courses that strongly relate to sustainability issues. Increasingly, study programs have the words “sustainable development” or “sustainable” in their title. Likewise the presentation of the research in sustainable development the results in this field are manifold and a comprehensive presentation is not possible (the search for IHE did not concentrate on courses offered but focused more on an institutional approach to sustainability). This can be the topic of a separate study (cf. BMBF 2004 for Germany). Nevertheless, the course catalogues of the IHE which were in the focus of this study where screened to search for courses relating to environmental, development and sustainability topics. Appendix 3 provides an overview on undergraduate and postgraduate (taught) courses at the IHE considered in this study.

As can be seen, these courses can be classified into broad categories. Many courses are offered in interdisciplinary Environmental Sciences programs. Some courses even relate to sustainable development in their title: some are simply called “Sustainable development” or “Sustainability”. Another broad field are courses with a focus on management issues (“Sustainability Management”, “Environmental Management”) and economics (“Ecological Economics”, “Sustainability Economics and Management”). Some of these courses relate to special topics such as “Ecotourism” or “Carbon Management”. Another field is formed by planning sciences. Other social sciences include “Education for sustainability” or “Environmental Law”. Some interdisciplinary courses on ecology and conservation can be found in a table in the annex as well. Here it is hard to draw the line, as some life and earth sciences that relate to sustainable development can easily be added. Another large group that is presented in the annex are environmental engineering sciences.

Illustration: Mälardalen University in 2007 had 13 programmes and 26 courses that related to at least two of three (or three of four) sustainability dimensions. See also Towards Sustainability 2.

e) Student projects

Yet another approach to support environmental education (and research) is followed by environmental and sustainability teams in the UK. Student projects relating to sustainable development are offered that can be carried out with support of the university on the campus. The project shop at the Kingston University offers a broad range of topics for assignments and dissertations from architecture and surveying, art and design, producing a film on sustainable Kingston, environmental sciences (audits, biodiversity action plan) to business and economics (cost-benefit-analysis) and more (Kingston University n.d. h). The Leeds Metropolitan University offers some student projects, as well. Different investigations on surveys, energy savings and rainwater use are on the agenda (Leeds Metropolitan University n.d. d).

3.5.2 Environmental awareness of the university community

a) Information on environmental impacts

In order to increase knowledge about environmental impacts of daily living and working some IHE use instruments that inform students and staff in different ways. The Liverpool
John Moores University provides a carbon calculator, a tool which can be downloaded on the webpage of the university sustainability office (Liverpool John Moores University n.d. d). The Cambridge University Environmental Consulting Society, a student voluntary organisation, has developed a carbon calculator especially designed for students (CUECS n.d.).

At the University of Freiburg, staff and students have access to statistics on the trends of environmental data on the web page of the university. Graphs show the history of electricity consumption, water consumption and the amounts of waste and paper on a yearly basis (Universität Freiburg n.d. h). At the University of Münster, an “energy-meter” in the main building displays the energy consumption of the university to all staff and students. Additionally, energy-saving hints and important dates are shown on the display (Universität Münster 2007).

Illustration: Mälardalen University has been selected as the only university in Sweden to be included into the Swedish WWF World Wildlife Fund model schools for sustainable development in 2008-2010.

b) Environment days and weeks

The organization of environment days or weeks is an instrument to inform the university community about environmental activities and problems at the institution.

The Oxford Brookes University has organized a yearly environment week for more than ten years now. Themes included a variety of different events such as an exhibition of the School of Art, Publishing and Music on recycling, fitness testing, car emission test, bicycle security marking, information on biodiversity and environmental friendly design as well as the distribution of energy-efficient light bulbs (Oxford Brookes University n.d. j). The Green Week 2008 at the University of St. Andrews will include a sustainable living fair with a large variety of topics from sustainable transport to ethical procurement. It includes the trade of eco-friendly products, second-hand bikes sale and an exhibition of fuel efficient cars. Those who are interested can sign for a thermal imaging of their house at a reduced price (University of St. Andrews n.d. f). The environment day at the University of Salford was organized in the form of several exhibitions. The sustainability team of the university could be met in order to talk about perspectives on sustainability of the university (University of Salford n.d. a) With the launch of its “Ecoversity” program, the University of Bradford organized a series of information meetings including lectures about the plans the university has to improve its ecological footprint as well as on global sustainability problems and local solutions to them (University of Bradford n.d. d).

At the University of Applied Sciences Zittau/Görlitz the days of the environment take place since 2001, having dealt with the topics climate protection and sustainable development, bio technology, bio ethics and biodiversity, flood protection and waste management (Hochschule Zittau/Görlitz 2005). The environment day in 2006 at the TU Dresden dealt with the topic organic food, providing information of different producers of organic food and including a discussion on the introduction of organic food in the university restaurants (TU Dresden 2007, p. 18). A discussion on climate change was in the centre of the environment day at the University of Bremen in 2007, workshops for pupils and guided campus tours on sustainability topics for staff and students were organized in 2005 (Universität Bremen 2005, pp. 98 & n.d. a).
c) Hints for environmentally sound behavior

Very common instrument of managing sustainability at universities are hints for environmentally friendly behaviour. These measures support an institution’s effort to save water and energy and make a large part of a sustainable travel management.

Hints for environmentally friendly behaviour are manifold and energy saving is probably the most common topic. Some examples might illustrate these efforts.

The University of Münster has developed a series of stickers giving hints on “classical” themes as switching the lights off and reducing the room temperature (Universität Münster n.d. b). The University of Freiburg and the TU Dresden provide a broad range of hints on heating, aeration and lighting, including information on the costs of the stand-by-mode of office-equipments (Universität Freiburg n.d. i; TU Dresden n.d. b). The “Switch and Save” campaign of the University of Edinburgh goes along with leaflets and fact sheets as well as a short film on resource conservation in everyday life under the slogan “life-long habits can be changed!” (University of Edinburgh n.d. a & n.d. b).

The University of Applied Sciences Bremen has – among others – developed posters on different environmental topics. They sensitize staff and students to reduce paper, water and energy consumption, and encourage waste recycling (Hochschule Bremen n.d. c). Other such efforts can be found at the University of Portsmouth (n.d.), the Anglia Ruskin University (n.d. d), the Swansea University (n.d. b) and the University of Applied Sciences Zittau/Görlitz (Hochschule Zittau/Görlitz n.d. b). But publishing hints and creating web sites are not the only channels that can be used: At Oxford Brookes University, new employees get a copy of a booklet called “Brookes and the Environment” (Oxford Brookes University n.d. k) and at the University of Bielefeld the university calendar for staff includes an environmental hint of the month (Universität Bielefeld 2006, p. 15). An example of a student eco-guide, a brochure with information about sustainable living, giving hints on where to buy organic and fair trade food in the city, recycling, green travel and ways to participate in a change for sustainability, can be found at Kingston University (n.d. e). At the same university, a shopping guide was published including a list of grocery stores, cafés, bars, restaurants and other shops where staff and students can buy green and fair products (Kingston University n.d. f). This shows that such activities to increase awareness are not only restricted to behavior in the institution itself.

As mentioned above, an important part of an IHE travel management is convincing and increasing awareness of the negative effects of individual transport. Two examples might illustrate this. A travel guide of the University of Leeds gives information on cycling, walking, and public transport to the university (University of Leeds 2006). An extensive travel information brochure of the Kingston University (n.d. g) guides the way to a more sustainable travel.

d) Energy saving contests

Energy saving contests are used in order to increase the awareness of staff and students by motivating them to contribute to a reduction of energy consumption with monetary incentives.

At the University of Lüneburg an energy saving campaign had the goal of saving 6% of energy between October 2006 and March 2007 (on a normalized data base). A 12% saving was achieved and 50% of the saved costs can now be invested into projects that are proposed by staff and students (Universität Lüneburg 2007a, p. 24 & n.d. b). A pilot project at the University of Freiburg is following the same approach: monetary incentives are used to let staff and students save energy in some of the buildings, accompanied by energy saving hints, lending of energy meters and advice by the working team on sustainability (Universität
Freiburg n.d. j). The environmental management unit of the TU Berlin has announced premiums for different departments that will be paid if certain goals are achieved (TU Berlin 2006, p. 23). The University of St. Andrews has run an interhall energy competition for the university-run residence halls. The hall with the highest energy savings (-20%) won a prize. This measure saved 45 tons of carbon dioxide compared with a business-as-usual scenario (University of St. Andrews n.d. g).

e) Ideas competitions, sharing ideas, and environment lotteries

An ideas competition serves as a form of participation and motivates staff and students to hand in ideas for improving the environmental performance of the IHE.

At the University of Osnabrück the ideas competition “think” was determined to collect ideas to make the departments and the administration more customer-friendly, to create a better working place, to improve the environmental performance as well as promoting a better communication and cost-savings. Of the 65 proposals 27 were awarded a prize (Universität Osnabrück 2004, p. 17). Similarly, ideas competitions with prizes for the best hints were run at the University of Freiburg (n.d. k), the Hochschule Bremen (n.d. c) and the University of Bielefeld (n.d. b). A remarkable project is the currently running “Cool It!” competition at the University of Manchester where a piece of art (cartoon, photo, sketch, small sculpture) that is connected to a more sustainable living shall be created by students who can win vouchers for that (University of Manchester 2008).

Without rewarding such incentives, IHE can still encourage the university community to share ideas on sustainable development. To do so, the environment working team at the University of Münster has installed a virtual suggestion box. Members of the university are called on to report where resources are wasted at the university and provide ideas to improve the environmental performance (Universität Münster n.d. d). The University of Portsmouth invites university members to give hints and to provide ideas on a web page as well (University of Portsmouth, n.d. b).

An incentive to deal with environmental topics was given by the University of Oldenburg, which ran an environment lottery where staff and students had to answer questions on the environmental management of the university to win several prizes (Universität Oldenburg n.d.).

f) Pledges

Two universities in the UK reported on pledges which can be understood as an instrument to increase personal commitment.

Within its “Ecoversity” program the University of Bradford invites its members to make a personal pledge to a more sustainable lifestyle. People have pledged to do voluntary work, to recycle, to save energy etc. (University of Bradford n.d. e). At the same university a “Green Travel Pledge” was promoted during a green travel week. Under the slogan “Yes – I’ll ditch the car” staff and students could promise to lower the carbon footprint caused by their travel to and from the university by using car share, public transport or by walking or cycling (University of Bradford n.d. f).

The University of Salford (n.d. b) has developed a charter for personal action. This charter contains several actions to be taken by staff and students such as switching off the light, reporting running taps, using public transport or printing double-sided and it specifies possible impact reductions as well as monetary savings that would be possible if all members contributed. The charter has been signed by 3,000 members of the university by October 2007 and the goal is to reach 5,000 one year later (University of Salford n.d. c).
3.6. Interdisciplinarity of research and education

The call for interdisciplinarity, which might be defined as “the appropriate combination of knowledge from many different specialities” (Brewer 1999, p. 328), can be found in the Talloires Declaration, the Kyoto Declaration and the Copernicus Charter (see appendix 2). This refers both to education and research programs.

As sustainability can be seen as an interdisciplinary concept (Kaufmann & Cutler 1995, p. 109) research and education on issues of sustainability should be interdisciplinary as well. The chapter on study programs relating to sustainable development has shown that many courses that are offered on sustainable development and environmental sciences raise the claim to be interdisciplinary. It can not be analyzed whether there is rather a “side by side of disciplines” (Baumgärtner et al. 2008) without integrative connections between the disciplines studied which might better be referred to as “multidisciplinarity” (Max-Neef 2005, p. 6). Same is true for the following examples of efforts to promote interdisciplinarity in research. “'Interdisciplinarity' is obviously en vogue in science, society and economy” (Schmidt 2008, p. 56). The goal here is not to analyse what lies behind the stated interdisciplinarity but rather to exemplify that there are approaches of a cooperation of disciplines.

At the University of Oldenburg the COAST-Centre for Environmental and Sustainability Research combines natural sciences, social sciences, economics and management sciences as well as computer sciences with the aim to conduct interdisciplinary research and educational activities in sustainability science. Additionally, the center defines itself as a “transdisciplinary umbrella” (Universität Oldenburg 2007, p. 6). In the chapter on inter- and transdisciplinary research in the sustainability report of the University of Lüneburg, it is stated: “Sustainability research is one of the strong research fields of the university. Because of the concentration on real social problems this work is mostly inter- and transdisciplinary.” and the following: „Convinced that innovations today mainly take place at the borders of established disciplines, the university is in its goals and structures committed to the demand
of a consequent integration and lived interdisciplinarity” (Universität Lüneburg 2007a, p. 32; own translation). The University of Kassel has developed competence in environmental research, which “is not a scientific discipline in the classical sense but comprises a number of disciplines of natural, engineering, and social sciences. This implies that environmental problems in practice are interdisciplinary issues which require response by different disciplines” (Universität Kassel n.d. d; own translation).

The Environment at Manchester (TEAM) is a network that connects and co-ordinates sustainability and environmental research of 25 different institutes, centres and research groups across the university. Interestingly, the university refers to the term “multidisciplinarity” rather than “interdisciplinarity” whereas the work of some of the different subsections is described as interdisciplinary (University of Manchester n.d. g).

3.7 Inter-university cooperation and networking

It was highlighted in all declarations on sustainable development that it is important to work together to promote a sustainable development of universities and the society. The Talloires Declaration even speaks about “maintaining the movement” by informing each other’s efforts to promote sustainable development (ULSF 1990, point 10). Other declarations point out that networks should be established with experts outside the university (cf. Copernicus Charter, point 7, CRE-Copernicus 1994).

One form that can be found is cooperation and education. Two examples were reported and stand for an assumably high number of cooperations of universities: the University of Oldenburg points to a number of cooperations with different institutions, among them the University of Kassel, the Institute for Ecological Economy Research (IÖW) in Berlin, the Wuppertal Institute for Climate, Environment and Energy, the Helmholtz Centre for Environmental Research – UFZ Leipzig. Furthermore, a regional partnership exists that connects the universities of Oldenburg, Bremen and Groningen (the Netherlands) in marine and energy research as well as postgraduate education: a Master in Water and Coastal Management is offered jointly (Universität Oldenburg 2007, pp. 22). One remarkable example of a regional cooperation can be found in Austria where the TU Graz and the University of Graz have built the cluster “Sustainable Universities Graz” in order to coordinate their work on sustainable development. Common activities, joint courses and establishing a research platform on sustainable development are the goals of this initiative (TU Graz 2006, p. 32). In Germany a network on sustainability research has been established. fona – Forschung für Nachhaltigkeit [research for sustainability] connects different actors in the sustainability research field, among them 235 research groups at universities and research institutions (Fona n.d.).

Next to these research cooperations and networks there are networks that deal with general aspects of sustainability at IHE. Www.eco-campus.net is a network that promotes sustainable development at IHE. It has been established in 1999/2000 by the FHW Berlin and the University of Osnabrück. The service includes mailing-lists, a collection of literature and documents, an event calendar, as well as information and best-practice examples on environmental and sustainability management in IHE. The network has 250 members and reached 71 IHE in Germany in 2002 (Eco-campus.net n.d.) However, the website seems not to be updated, the last entries are from 2004 and an enquiry has not been answered. Another initiative is “Arbeitskreis Gesundheitsfördernde Hochschulen” [working team health promoting universities] which connects health appointees at universities and provides a project database to share good practice as well as an extensive document pool and a literature database concerning health issues at universities (Arbeitskreis Gesundheitsfördernde Hochschulen n.d.).
The Environmental Association for Universities and Colleges (www.eauc.org.uk) is a similar (but active) network in the UK. More than 230 universities and colleges are members in this network which was founded in 1996 and collects and provides information on different topics of sustainability management at IHE (EAUC n.d. a). Sharing experience from member organizations and working with other institutions in order to promote a sustainable development of the UK higher education sector are the main tasks of this association (EAUC n.d. b).

With a focus on education for sustainable development the Global Higher Education for Sustainability Partnership (GHESP) was established in 2002 by the International Association of Universities (France), the United Nations University (Japan), the UNESCO, University Leaders for a Sustainable Future (ULSF, U.S.) and Copernicus-Campus (Germany/Europe). One of the targets is to promote the implementation of university declarations on sustainable development (Talloires, Kyoto, Copernicus) (IAU n.d.).

There are several other networks outside the focal area of this study. The Alliance for Sustainability is an initiative of four universities from different continents: the ETH Zürich, the Massachusetts Institute of Technology, the University of Tokyo and the Chalmers University of Technology, Göteborg. The goal of this initiative is cooperation in research and education for sustainable development (Alliance for Sustainability n.d.).

An initiative in the U.S. is “Campus Ecology” by the National Wildlife Federation, which collects and provides good practice examples and gives support to IHE that want to improve their environmental performance (National Wildlife Federation n.d.). The Association for the Advancement of Sustainability in Higher Education (AASHE) is a member organization of colleges and universities in the U.S. and Canada that has the goal to promote sustainability in all areas of university life (AASHE n.d.).

Illustration: Mälardalen University is cooperating with Örebro University in its sustainability research efforts.

3.8 Knowledge transfer and partnerships with other sectors

Next to generating knowledge and imparting knowledge to students, it is seen as one important task of universities to transfer knowledge to society (BMBF 2004, p. 33). This theme makes up a large part of the declarations on sustainable development. All of them mention actions that have to be taken in this area (see appendix 2). These range from educational projects for schools (Talloires Declaration) through partnerships with different segments of society (Halifax [UNESCO 1991], Swansea [UNESCO 1993b], Copernicus [CRE-Copernicus 1994]) to dissemination of knowledge to society (Copernicus [CRE-Copernicus 1994]). In the following, different efforts will be presented that have been reported by the analyzed IHE.

3.8.1 Conferences and events

Conferences and events that are open to an interested public may serve as a communication channel to society. Some examples are chosen for events that relate to sustainable development. These complete the above mentioned activities as lecture series and action days which are often open to the public and not only addressed to the university community.
The sustainability report of the University of Lüneburg lists a number of events on sustainable development, as e.g. the conference “Higher Education for Sustainable Development: New Challenges from a Global Perspective”, a conference on the occasion of the inauguration of the UNESCO chair “Higher Education for Sustainable Development” in 2005, a panel discussion on the sustainability of the football world cup 2006, and a day of action called “Campus Global” with workshops, exhibitions and films as well as other activities relating to global challenges (Universität Lüneburg 2007a, p. 42). In the report of the Catholic Academy in Bavaria one can find a number of events with sustainability topics (energy taxes, poverty reduction, globalization) (Katholische Akademie in Bayern 2005, p. 24), whereas both the TU Cottbus and the University of Kassel focus on environmental topics in their conferences and events for the interested public (Universität Kassel n.d.; TU Cottbus 2007, pp. 60). Especially addressed to a broad public is the yearly “Night of Science” where scientific institutions present their work in Berlin. The TU Berlin participated with 24 projects relating to sustainable development (TU Berlin 2006, p. 19). A conference called “Sustainability in Practice: From Local to Global: Making a Difference.” took place in 2007 at the Kingston University and connected scientists, practitioners and NGO representatives as well as an interested public (Kingston University 2007).

The number of conferences and events at the considered IHE might be larger. Of special interest for a development of indicators and a measurement of sustainability at IHE is a quantification of these efforts. Two examples for this come from Sweden. The Göteborg University defines events as a variety of activities ranging from “open lectures and op-ed articles to University-TV and exhibits” (Göteborg University 2006, p. 12). With such a rather broad definition, a number of 264 events relating to environment and sustainable development took place in 2006 (30 segments in University TV, 90 events in calendars and 144 events reported by faculties) (Göteborg University 2006, p. 12). In the events calendar of the University of Lund 20 – 25% of all events had a relation to environment and/or sustainable development in 2006/07 (although it stays, as often, unclear how the line was drawn) (University of Lund 2008).

3.8.2 Educational projects with pupils

There are some examples of educational projects of IHE that are offered to schools or for pupils. At the University of Bremen a project on scientific literacy and education for sustainable development for primary schools takes place. Students and teachers develop courses for “Sachunterricht” (which is a broad range of natural and social science topics in the primary school in Germany). Examples are a course on “Water – a fascinating substance” (own translation) with the goals of teaching a basic understanding of natural laws and sparking interest. The course includes among other things experiments on daily water consumption. Another course, “Future of the Earth – Future of the Children” (own translation) dealt with the topic of sustainable development, exemplified by tea production (Universität Bremen 2005, pp. 91). Projects with schools at the TU Cottbus comprise laboratory work and the design of a nature trail (TU Cottbus 2007, pp. 66). The TU Dresden runs a “WaldErlebnisWerkstatt” [forest experience workshop] for environmental education and education for sustainable development. Additionally, the university has developed a nature trail on sustainability explaining the concepts with the help of its roots: sustainable forest management (TU Dresden 2007, pp. 19). At the University of Kassel a pupil university for advanced pupils (upper secondary level) took place. Topics included sustainability and technology, alternative energy sources, energy saving and climate change (Universität Kassel n.d. f).
The Manchester Museum at the University of Manchester has hosted two 2-day-conferences for pupils from Manchester on the topics water and sustainability (University of Manchester 2006, p. 3). The Children’s University of Manchester has developed a web platform for interactive learning in health, arts and science (including energy and environmental topics) for 7-11 year old pupils (University of Manchester 2006, p. 3 & n.d. h).

### 3.8.3 Sustainable entrepreneurship and spin outs

As a part of transfer activities universities can support sustainable and environmental entrepreneurship (cf. Dean & McMullen 2007 for these concepts). An example can be found at the University of Glamorgan. The company RUMM (Remote Utility Monitoring and Management) is a spin out of the university dealing with planning and implementation of energy management of organizations with the target to reduce energy costs and environmental impact (RUMM n.d.). Among the start-ups that have been supported by the University of Lüneburg are some companies that can be classified as environmental entrepreneurs (or “ecopreneurs”): companies dealing with renewable energy, planning of exhibitions for nature conservation, consulting in regional development and education (Universität Lüneburg 2007a, p. 37). A spin-off of the ETH Zürich is “myclimate”, a company which deals with carbon offsetting (ETH Zürich n.d. b).

### 3.8.4 Knowledge portals

Another form of knowledge transfer to society is the development of knowledge portals where scientific knowledge is presented to a broader public. Examples for that have only been found at universities outside the focal area, but they might be presented here in order to give a broader picture. At the Göteborg University an environmental portal, “Miljöportalen” has been developed. It is a popular science web site that presents information on different environmental topics (Göteborg University 2006, p. 6; www.miljoportalen.se). The Turku Polytechnic University (Finland) runs a “green path” website on sustainable development which aims especially at young people (Turku Polytechnic 2004, p. 48).

### 3.8.5 Networking and community engagement

IHE can act in local, regional, national and global networks on sustainability topics, first of all in the role of an advisor. Several examples could be found for this category.

The University of Hannover is engaged in a regional climate protection initiative which tries to find strategies to protect the climate and connect this with economic development (Universität Hannover 2004, p. 9). The TU Cottbus gives advice on energy questions to the student service agency (Studentenwerk) which runs the university restaurant. Energy analyses have been conducted (TU Cottbus 2007, pp. 70). Having introduced an environmental management system after EMAS\(^4\), the University of Bremen could provide knowledge and experience of this process to other institutions. In a state-aided project teams of public institutions in Bremen (University of Bremen, University of Applied Sciences Bremen, a state-run school institute, a school center, and the senator for building and environment) worked together in order to find synergies and to exchange experience. As a result, EMAS could be introduced in all institutions (Universität Bremen 2005, pp. 86).

\(^{14}\) EMAS is the Eco Management and Audit Scheme developed by the European Union.
In order to facilitate network and cooperation with society, the TU Berlin has founded a central institution for cooperation (Zentraleinrichtung Kooperation). This service unit works especially in the fields of sustainable development and environment. It initiated projects such as a database of graduate theses relating to sustainable development, a research database, workshops and lectures open to the public and several projects with regional institutions (TU Berlin 2006, p. 18).

The University of Hertfordshire provides funds for a cooperation of the environmental team and supporting students together with local schools in order to increase environmental awareness of pupils (University of Hertfordshire n.d. g). In addition to that, the environmental team lists several local and national organizations they have worked with in order to support the local community, including NGOs, councils and schools (ibid.). The Sheffield Hallam University is engaged in planning programs together with the city in order to plan student accommodations across the city. Furthermore, the university works together with several local NGOs (Sheffield Hallam University 2006, p. 4). Under the slogan “Working in partnership” the University of Gloucestershire presents its partnerships for sustainable development which comprise projects on the restoration of a local water channel, the development of climate change strategies and a green business club (University of Gloucestershire n.d. c). The London South Bank University publishes the quarterly newsletter “Communiversity” addressing local organizations and informing about the university’s interest to work with the community (London South Bank University n.d.). The University of Salford described its close connections to industry and might be representative for several other universities: The Centre for Sustainable Technologies and Regeneration provides expert advice, design and testing facilities for business partners (University of Salford n.d. d).

Two examples from outside UK and Germany might complete this collection of examples for partnerships. In Austria, the University of Graz participated in a project on improvement of environmental performance together with the city and several companies of Graz as well as environmental experts (Universität Graz 2005, p. 50).

The “seed sustainability” platform of the ETH Zürich coordinates sustainability research of students (bachelor, master or doctoral theses) in projects together with practice partners outside the academia (Seed Sustainability n.d.).

Community engagement in the form of voluntary work is another topic that fits in this category but might as well be classified as one form of participation (which will be described later on). The University of Bradford runs the UCAN volunteering centre which coordinates voluntary work of students in the community. Among the projects offered are conservation work, work with disabled people, children or elderly people, help in sport programs and so on (University of Bradford n.d. g). In the sustainability report 2006 the University of the West of England presents a similar range of projects and states the following: “Voluntary work is a important part of UWE’s contribution to sustainable development. The UWE ‘Community Volunteer Programme’ helps UWE students and staff to give their time for free in order to help local voluntary organisations. This enables volunteers to gain new skills and experiences whilst helping local charities provide vital services to the public.” (University of the West of England 2006, p. 14).
3.9 Sustainability communication

Another sustainability theme is the communication on sustainable development of the own institution. This theme did only emerge in two declarations (Halifax [UNESCO 1991] and Kyoto [UNESCO 1993a]). The probably more important declarations with high numbers of signatories (Talloires [ULSF 1999] and Copernicus [CRE-Copernicus 1994]) do not explicitly mention communication efforts although the promise to “demonstrate real commitment” (CRE-Copernicus 1994, point 1) or “to inform [...] each other’s efforts in carrying out this declaration” (ULSF 1990, point 10) might well be interpreted as a call for sustainability communication. It was especially important for this study to have university documents on sustainable development available for an analysis. It was found that communication on sustainable development can be done with the help of sustainability reports, environmental reports, CSR reports as well as – in one case – a progress review on the implementation of a university declaration. Next to this, other media, such as newsletters and university brochures were found.

3.9.1 Different forms of reports

Reports that were referred to as “Sustainability Reports” were found at a rather small number of IHE, as can be seen below. They contain a “classical” division in social, economic and environmental dimensions. Reports that follow the sustainability reporting guidelines of the Global Reporting Initiative are marked with (*). Names of IHE and reports are kept in original language in the lists below.

Germany

• *Universität Lüneburg: Schritte in die Zukunft. Nachhaltigkeitsbericht 2005/2006 (Universität Lüneburg 2007a)
• Universität Bremen: Nachhaltigkeitsbericht 2005 (Universität Bremen 2005)
• Katholische Akademie in Bayern: Nachhaltigkeitsbericht 2005 (mit integrierter Umwelterklärung) (Katholische Akademie in Bayern 2005)

United Kingdom

• Sheffield Hallam University: Sustainability in the University (2005 & 2006) (Sheffield Hallam University 2006)
• University of the West of England: Sustainability Report 2006/07 (University of the West of England 2007)
Outside the focal area

- TU Graz: Nachhaltigkeitsbericht der TU Graz 2005/06 (TU Graz 2006)
- Göteborg University: Committed to a sustainable society. Sustainability report 2006. (author’s note: focuses on environmental impacts) (Göteborg University 2006)
- Turku Polytechnic University (Finland): Corporate Social Responsibility Report 2004 (Turku Polytechnic 2004)
- University of Hong Kong: Sustainability report 2005. (University of Hong Kong 2005)

Next to these sustainability reports there are several environmental reports, some of which strongly refer to sustainability. Examples are the environmental report of the FHW Berlin (subtitle: “Lichter der Nachhaltigkeit” [approximately: “highlights of sustainability”; FHW Berlin 2006] or of the TU Berlin (subtitle: “Nachhaltig Lehren und Forschen” [“teaching and doing research sustainably”]; TU Berlin 2005 & 2006).

One example of a progress review on the implementation of a university declaration has been found. The University of Manchester has signed the Talloires Declaration and published a “Talloires Declaration: Status Report” in 2006, listing measures undertaken in all of the ten points of the declaration (University of Manchester 2006).

3.9.2 Other media

Next to sustainability and environmental reports, websites of environmental and sustainability teams and coordinators inform about the sustainability commitment of the IHE. These were also a major source for this study.

Several other communication channels are used in order to inform the public as well as the academia. It has been mentioned earlier, that some IHE organize a sustainability or environmental information day. These occasions can be used to communicate personally. Other ways will be presented shortly in the following.

The University of Hertfordshire publishes the newsletter “EcoClips” in order to inform about the environmental and sustainability work at the university (University of Hertfordshire n.d. h). The University of Cambridge publishes “Greenlines – A Sustainability Newsletter for the University” (University of Cambridge 2007). The Göteborg University presents a list of several communication channels used to inform staff, students and the public about the sustainability work of the university. Among the measures are: an environmental information folder, an exhibition, a film, an advertisement in the Student Union’s magazine, lectures, articles in the university journal and newspaper articles (Göteborg University 2006, p. 20).

Both the University of Lüneburg and the Göteborg University have produced a film about sustainable development at the university (Universität Lüneburg n.d. d; Göteborg University n.d.).
3.10 Participation of the university community

As discussed above, participation is seen as an important requirement for sustainable development at IHE. The term participation may here be used in a sociological sense as an active attendance of an organization’s members in the determination and realization of the objectives of this organization (cf. Schubert & Klein 2006). On an organizational level, employee involvement has been defined as “a participative process to use the entire capacity of workers, designed to encourage employee commitment to organizational success. This process typically comes about by giving employees some combination of influence and/or incentives” (Cotton 1993, cited in Seibold & Shea 2001). This may here be extended to students. Such a broad definition would include initiatives that have been described earlier, such as personal commitment charters, ideas competitions, energy saving contests where certain influence is given, incentives are offered and partaking and commitment are required. But as these measures also strongly aim at an increased environmental awareness they might be discussed under that category. The following section will focus more on the role of students and staff in organizing and shaping sustainable development at IHE actively. Although projects initiated by students might make up a considerable part of participatory activities at some IHE, they will not be presented in the following for the reasons that first, this study focused on activities initiated by IHE, that is the university management, and therefore only the institutions’ reports and websites have been analysed, and second, one can expect an enormous number of activities initiated by students so that a separate study would give a better and broader picture. The fact that a few IHE mentioned student activities in their reports and on their web pages (e.g., Universität Oldenburg 2007, p. 21; Universität Lüneburg 2007a, p. 18; TU Cottbus 2007, p. 11, Universität Graz 2005, p. 23) might be an indicator of existing cooperation and mutual support with student groups as a part of an IHE’s sustainability efforts.

3.10.1 Committees, forums and working teams

Very common instruments to provide possibilities to participate are committees or working teams dealing with sustainability or environmental issues. As Creighton (1998, p. 21) states:

“A university-wide committee can help institutionalize environmental stewardship efforts and bring stakeholders to the table. It may oversee broad-based environmental action to take a strong hand in shaping detailed plans of action. The committee membership should reflect the university community (students, faculty, staff, and administrators).”

The tasks and the actual influence of these committees might be different, and the composition actually differs from institution to institution, but nevertheless some similarities could be observed. Two groups can be distinguished: committees with (more or less strongly) defined groups of participants and open forums.

3.10.2 Committees with defined groups of participants

Committees with defined memberships ensure the representation of different groups of the university community. Appendix 4 shows the result of the analysis of the composition of sustainability/environmental committees at ten IHE in Germany and the UK. It can be seen that in all committees different groups are represented. Appointees with direct relation to
sustainability issues in their work can be found in all committees. They occupy different positions such as environmental managers, sustainability coordinators, energy and waste managers, travel managers, health and security officers, risk prevention and social care appointees. Next to that, representatives of faculties/schools, departments, centres and institutes are found. The number of representatives varies highly with up to 19 representatives of faculties. Another important group are student representatives. Members of the Student Union are sent to participate in committees. One university (Universität Osnabrück, n.d. d) offered a seat for a political student group and one offers places for students of every faculty (University of Sussex, n.d. d). In five committees the university’s top management is directly involved (rector, vice chancellor). A large part of such committees is made up by administration staffs that are (more indirectly) involved in sustainability issues, as e.g. the central procurement, property management or press office and marketing appointees. Other participants come from the library or the data center. The tasks and the level of influence of such committees differ. They range from networking activities and exchange of experience (Universität Bremen n.d. b), to initiating projects, promotion of communication and cooperation (Universität Münster, n.d. e) and consultative, advisory and monitoring activities (University of Sussex, n.d. c). Where the board directly reports to the university management the tasks seem to be more influential: at the FHW Berlin such a committee coordinates and evaluates the environmental work and develops the environmental program (FHW Berlin 2006, p. 30). At the University of the West of England the Sustainability Board’s tasks are “to give leadership and strategic direction” and to provide “scrutiny, monitoring and evaluation of activities”. Additionally, it “coordinates communication and awareness of activities across the University” (University of the West of England 2007, p. 8).

Illustration: Mälardalen University has a Sustainability Steering Committee that runs the profiling efforts regarding sustainable development.

3.10.3 Open forums and working teams

Environmental and sustainability forums and working teams that are open to all members of the university community exist at some IHE. Under the direction of the environmental management of the HAW Hamburg, students and staff can work in “environmental teams” in order to improve the environmental performance (HAW Hamburg n.d. b). The working team “energy and environment” is an independent forum at the University of Hamburg and works together with the administration in different projects like use of recycling paper, energy saving or sustainable building (AK Energie und Umwelt n.d.). Students and staff are invited to participate in a sustainability forum at the Swansea University. The forum discusses several aspects relating to a sustainable development of the university and includes representatives from different parts of the institution (Swansea University n.d. e). The environmental committee of the University of Osnabrück also invites all interested staff and students explicitly (Universität Osnabrück n.d. d). The Environmental Forum of the Oxford Brookes University has more than 300 members. Information is distributed by a mailing list and lectures are organized (Oxford Brookes University n.d. l).

3.10.4 Other forms of involvement

The University of Hertfordshire provides two good examples for the promotion of participation of students and staff. On the web page of the environment team a statement
shows the high willingness to let staff participate: “There are over 2,000 staff at the University of Hertfordshire. Together we have the huge potential to improve the environment and make a difference for future generations.” (University of Hertfordshire n.d. i). The environment team is looking for volunteers for sustainability activities and is recruiting “environmental reps”. These representatives help to run the environmental management on a voluntary basis. They report to an environmental working group, contribute ideas, participate in training, take part in reviews ad try to raise awareness in their work environment (University of Hertfordshire n.d. j). A similar statement puts emphasis on student involvement:

“There are over 22,000 students at the University of Hertfordshire. Together you have the huge potential improve the environment and take the concept of sustainable development into your professional careers.” (University of Hertfordshire n.d. k)

The university runs an “EcoRep programme” for students: students can apply to become an EcoRep, they are then taught on environmental and sustainability issues and distribute this knowledge mainly by talking to students living in the residence halls on the campus and by organizing activities in order to encourage further awareness and participation of the students (University of Hertfordshire n.d. l).

In connection with the “Switch OFF” energy saving campaign, the Anglia Ruskin University searched for volunteering “Energy Wardens” for every building of the university for the communication and the promotion of the campaign as well as the identification of energy saving potentials in the buildings or the faculty. Next to these, the University searched for “Energy Reps” who work on an even more local level and support the Energy Wardens in their work by promoting the campaign, collecting good practice examples and convincing their colleagues to save energy. Both roles are described in more detail in a separate document (Anglia Ruskin University n.d. e).

As part of the “Ecoversity” program of the University of Bradford at least ten student ambassadors were recruited. These paid positions offer training to the ambassadors who will then work on sustainability issues throughout the university by developing and implementing projects (University of Bradford n.d. h). The Sustainability Team at Kingston University offers possibilities to be engaged as a volunteer on the campus in their activities, campaigns and events. Additionally, the team lists a number of possibilities to volunteer in projects relating to the university, as e.g. the Student Union, People and Planet working groups (networking activities among student initiatives in the UK) as well as local councils and initiatives (Kingston University n.d. i).

Students can also be involved in the sustainability management as part of their education as the last two examples show. The environmental report of the campus Birkenfeld of the University of Applied Sciences Trier is based on an initiative of students. In an interdisciplinary project seminar environmental data was collected and within the scope of a diploma thesis one student contributed as a final editor (FH Trier 2004, p. II). At the University of Applied Sciences Zittau/Görlitz students are involved in the internal audit of the environmental management system. This process is guided by a lecture on environmental management systems and leads to a documentation and presentation of the results to an external auditor (HS Zittau/Görlitz 2005, p. 28).
4 Toward a sustainable university

We are at the end of this journey “into the specifics” of good practice of sustainability at institutions of higher education and this is the place to draw some more general conclusions. Starting with the abstract definition of sustainable development it was shown how sustainability at university level can be operationalized and how universities interpret and implement sustainability at their institutions.

A considerable number of university leaders have committed their institutions by the signing of university declarations. The action plans of the five university declarations of Talloires, Halifax, Swansea, Kyoto and Copernicus formed, together with a literature review the basis of this study. At a more abstract level ten broad fields of sustainability at IHE were defined and exemplified in a broad empirical study. The focal area was Germany and the United Kingdom, but where appropriate universities in other countries were referred to. According to these results, a ‘sustainable university’ would have to work in these ten fields. An overwhelming variety of examples has been found in every category. This study made references to more than 360 single examples at 22 IHE in Germany and 27 IHE in the United Kingdom as well as several universities outside the focal area (about 30 examples).

Institutional commitment is made with the help of sustainability policies and guidelines at some universities. Others have environmental policies referring to sustainable development. The sustainability and environmental commitment is used to build a profile in some universities.

Operating sustainably in the own institution has an environmental focus in most of the analyzed IHE. A variety of different examples – by far the most of each of the ten fields – were found in this area. Among the examples are projects to reduce resource consumption by energy efficiency or with intelligent facility management. Renewable energy projects were promoted, especially solar cells. Awareness is rising that universities have to face the challenge of climate change and some institutions have started to measure and reduce their carbon dioxide emissions and partly they are even offset. The reduction of water consumption and the introduction of waste recycling facilities are widespread. IHE have introduced procurement policies which include the purchase of environmentally sound office equipment, where special emphasis is put on the use of recycled paper. The promotion of a more environmentally friendly transport is another topic, including projects on car-sharing, incentives to use public transport and the promotion of bicycle use. The provision of regional or organic food in the restaurants on campuses is advanced in some IHE. The promotion of fair trade, which takes place in a number of universities in the UK, can be seen as a comprehensive issue as it promotes a socially just and economically stable development having regard to ecological sustainability in developing countries. Additionally, some examples for a biodiversity management on campuses were provided next to some other environmental topics. The social dimension of a sustainable development is addressed by some IHE. The topics include questions of work-life balance, the promotion of health, anti-discrimination, aid to handicapped people and collections for charity.

While the responsibility towards sustainable development is mentioned in policy documents in general, some universities pointed to ethical obligations explicitly.

Research activities, one of the main tasks of universities, were considered briefly. Research relating to sustainable development was analysed by some universities where they constitute a considerable part of all the research conducted.

References were counted in the text. Examples for courses offered were not considered.
In the promotion of *environmental awareness and literacy* universities play a central role. First, there are project that have an influence on environmental knowledge and behavior of the university community: among others, information on environmental impacts, events such as sustainability days, hints for environmentally sound behaviour, incentives like energy contests or ideas competitions and the calling to make pledges for a more sustainable lifestyle. Second, a range of curricular activities take place. Universities try to integrate sustainability issues into general study modules open to all students and in study programs. Additionally, study programs with a direct relation to sustainable development have been developed (environmental and sustainability studies, engineering and management courses to mention a few).

*Interdisciplinarity of research and education* is on the agenda of universities: study programs on sustainability are designed interdisciplinary and research centres claim interdisciplinarity for their work.

Universities *cooperate with each other* in order to promote sustainability and they *build networks* to share experience on the implementation of sustainability issues at their institutions.

*Knowledge transfer and partnerships* include conferences and events, educational projects with schools and supporting sustainable forms of doing business. Networks are built with local actors, community engagement takes places in the form of voluntary work.

If IHE would not *communicate their efforts* to promote sustainability this study could not have been conducted with the chosen method. Sustainability and environmental reports as well as websites and a variety of other media is used to reach both the university community and the interested public.

Last but not least there are approaches of *participation of the university community*. In committees, forums and working teams different groups at universities can have an influence on sustainability activities of their institutions. Students and staff representatives act as multiplicators for the promotion of the idea of sustainable development on the campus.

If one puts all these examples together, a fictional model university realizing these projects and activities would certainly pass a review of every university declaration on sustainability. But, although the chosen IHE are supposed to be leading in the promotion of sustainable development, no institution could be found with a good practice example in all ten fields. There are some barriers to change that might prevent this and obviously, universities concentrate on special topics in their sustainability work.

A lesson learned in connection with this problem is that sustainability is context-related. Universities are embedded in different contexts which can form focal areas of their sustainability management. Some examples shall illustrate this. Whereas a biodiversity management as part of the sustainability activities might be expected of an institution that owns several hectares of land including biotopes, at a downtown campus university there might be no need to have such a plan. Where students do not claim participation forcefully, there might be no need to ensure student representation in environmental committees. As universities in the UK are responsible for student halls, this offers other possibilities (and implies other responsibilities) for the reduction of resource consumption than in other countries where students live outside the campus. German universities, for instance, would have to cooperate with different landlords and the student services that run student residences. National differences have an influence on the sustainability focus: the introduction of a fair trade status for universities by an NGO, the Fairtrade Foundation, might be called a national fair trade wave among universities in the UK as many followed this approach and have achieved the status or work towards it, whereas such a campaign does not exist in Germany.
Though, in order to achieve the status of a ‘sustainable university’ there is evidence both in the literature, in university policy documents and in practice that the ten fields defined in this study are decisive for a sustainable development at IHE. A lot of work remains to be done so that more universities ‘practice what they preach’ in their daily operations, that they ‘preach what they already practice’ (integrate sustainability in the curriculum) and that sustainability gets well-established in research activities.
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7 Appendices

Appendix 1 – Analyzed institutions of higher education in Germany and the United Kingdom

Appendix 2 - Sustainability themes in declarations on sustainability in institutions of higher education

Appendix 3 – Study programs relating to sustainable development

Appendix 4 – Members of environmental and sustainability committees and working teams

Appendix 5 – Supplementary literature and Internet links
### Germany

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7.2 Appendix 2 - Sustainability themes in declarations on sustainability in institutions of higher education


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<td>Institutional commitment</td>
<td>“establishing institutional ecology policies” (5)</td>
<td>“commitment to the principle [...] of sustainable development” (1)</td>
<td>“to give life of this declaration in the mission of each of its members” (7)</td>
<td>“institutional commitment to [...] sustainable development” (1)</td>
<td>“commitment to the principle [...] of sustainable development” (1)</td>
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<td>Sustainable operations</td>
<td>“establishing [...] practices of resource conservation, recycling, waste reduction, and environmentally sound operations” (5)</td>
<td>“commitment to the [...] practice of sustainable development” (1)</td>
<td>“to review their own operations to reflect best sustainable development practices” (6)</td>
<td>“sustainable consumption practices” (2)</td>
<td>“commitment to the [...] practice of environmental protection and sustainable development” (1)</td>
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<td>Emphasis on ethical obligations</td>
<td>-</td>
<td>“to emphasise the ethical obligation of the present generation” (3)</td>
<td>“to emphasize the ethical obligation of the present generation” (3)</td>
<td>“ethical obligations of the immediate university community” (7)</td>
<td>“environmental ethics” (2)</td>
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<td>Research on sustainable development</td>
<td>“to engage in [...] research” (2) “encourage involvement [...] in supporting interdisciplinary research” (6)</td>
<td>-</td>
<td>“to undertake research in sustainable development” (4)</td>
<td>“encourage interdisciplinary and collaborative research programs” (6)</td>
<td>“encourage [...] research programmes” (5)</td>
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<td>Environmental literacy and awareness</td>
<td>“increase awareness” (1) “educate for”</td>
<td>“encourage a better understanding on the part of society” (2)</td>
<td>“encourage a better understanding on the part of governments and”</td>
<td>“develop the capacities of its academic staff to teach environmental”</td>
<td>“education of university employees” (3)</td>
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<td>- of employees</td>
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<td>environmentally responsible citizenship” (3)</td>
<td>“increase environmental literacy” (4)</td>
<td>“increase environmental literacy” (4)</td>
<td>literacy” (3)</td>
<td>“programmes in environmental education” (4)</td>
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<td>- of students</td>
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<td>“foster environmental literacy for all” (4)</td>
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<td>“encourage […] an environmental perspective” (4)</td>
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<td>- of the public at large</td>
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<td>“environmental education programs” (5)</td>
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<td>Interdisciplinarity of research and education</td>
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<td>“Collaborate for Interdisciplinary Approaches” (7)</td>
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<td></td>
<td>“encourage interdisciplinary […] research programs” (6)</td>
<td>“Interdisciplinarity” (5)</td>
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<td>Inter-university cooperation and networking</td>
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<td>“Create an Institutional Culture of Sustainability” (2)</td>
<td>“to cooperate with one another” (5)</td>
<td>“to co-operate with one another” (5) &quot;common enterprise of the ACU” (7)</td>
<td>“promote interdisciplinary networks” (8)</td>
<td>“networking” (7)</td>
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<td>Knowledge transfer and partnerships with other sectors</td>
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<td>“Enhance Capacity of Primary and Secondary Schools” (8)</td>
<td>“To cooperate […] with all segments of society” (5)</td>
<td>“To co-operate with one another and with all segments of society” (5)</td>
<td>“Promote interdisciplinary networks to collaborate” (8)</td>
<td>“Dissemination of knowledge” (6)</td>
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<td>“Broaden Service and Outreach” (9)</td>
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<td>“Continuing education programmes” (9)</td>
<td>“Technology transfer” (10)</td>
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<td>“Involve All Stakeholders” (6)</td>
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<td>“Partnerships” (8)</td>
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<td>“communicate these undertakings” (6)</td>
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<td>“ … to communicate that commitment” (1)</td>
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7.3 Appendix 3 – Study programs relating to sustainable development

Source: Websites of IHE, German study programs were translated.

### a) Environmental Sciences and Studies in Sustainable Development

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<td>Sustainable Development</td>
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<tr>
<td>Kingston University</td>
<td>Sustainable Environmental Development with Management Studies</td>
<td>M.Sc.</td>
<td><a href="http://www.kingston.ac.uk/pgsusdev/">http://www.kingston.ac.uk/pgsusdev/</a></td>
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<td>Global Development &amp; Peace Studies</td>
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<td><a href="http://prospectus.leedsmet.ac.uk/main/detail.htm?&amp;p=58&amp;course_id=7142&amp;attendance=1">http://prospectus.leedsmet.ac.uk/main/detail.htm?&amp;p=58&amp;course_id=7142&amp;attendance=1</a></td>
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<td>Universität Freiburg</td>
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<td><a href="http://www.meg.uni-freiburg.de/megcms/cms">http://www.meg.uni-freiburg.de/megcms/cms</a></td>
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**b) Management and Economics**

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**c) Planning**

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<tr>
<th>IHE</th>
<th>Name of the course</th>
<th>Degree</th>
<th>Reference website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingston University</td>
<td>Planning and Sustainability</td>
<td>M.A.</td>
<td><a href="http://www.kingston.ac.uk/pgplansustain/">http://www.kingston.ac.uk/pgplansustain/</a></td>
</tr>
<tr>
<td>Queen’s University Belfast</td>
<td>Environmental Planning</td>
<td>B.Sc./ M.Sc.</td>
<td><a href="http://www.qub.ac.uk/home/ProspectiveStudents/FindACourse/ucf/">http://www.qub.ac.uk/home/ProspectiveStudents/FindACourse/ucf/</a></td>
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<tr>
<td>Universität Hannover</td>
<td>Landscape architecture and environmental planning</td>
<td>B.Sc.</td>
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<td>Universität Hannover</td>
<td>Landscape architecture</td>
<td>M.Sc.</td>
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<tr>
<td>Universität Hannover</td>
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<td>M.Sc.</td>
<td><a href="http://www.uni-hannover.de/de/studium/studienfuehrer/landchaftsarchitektur/">http://www.uni-hannover.de/de/studium/studienfuehrer/landchaftsarchitektur/</a></td>
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<tr>
<td>University of Cardiff</td>
<td>Sustainability, Planning and Environmental Policy</td>
<td>M.Sc.</td>
<td><a href="http://courses.cardiff.ac.uk/postgraduate/course/detail/260.html">http://courses.cardiff.ac.uk/postgraduate/course/detail/260.html</a></td>
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<tr>
<td>University of Glamorgan</td>
<td>Applied Environmental Planning</td>
<td>M.Sc.</td>
<td><a href="http://www.glam.ac.uk/coursedetails/685/437">http://www.glam.ac.uk/coursedetails/685/437</a></td>
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**d) Other interdisciplinary studies in ecology and conservation**
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<th>Degree</th>
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<tbody>
<tr>
<td>Liverpool John Moores University</td>
<td>Wildlife Conservation</td>
<td>B.Sc.</td>
<td><a href="http://www.ljmu.ac.uk/courses/undergraduate/58207.htm">http://www.ljmu.ac.uk/courses/undergraduate/58207.htm</a>**</td>
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<tr>
<td>Sheffield Hallam University</td>
<td>Environmental Conservation</td>
<td>B.Sc.</td>
<td><a href="http://prospectus.shu.ac.uk/op_UGlookup1.cfm?id_num=612">http://prospectus.shu.ac.uk/op_UGlookup1.cfm?id_num=612</a>**</td>
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<tr>
<td>Universität Freiburg</td>
<td>Forestry and Environment</td>
<td>B.Sc.</td>
<td><a href="http://www.bachelor-ffu.uni-freiburg.de/">http://www.bachelor-ffu.uni-freiburg.de/</a>**</td>
</tr>
<tr>
<td>Universität Göttingen</td>
<td>Biological Diversity and Ecology</td>
<td>B.Sc./ M.Sc.</td>
<td><a href="http://www.uni-goettingen.de/de/37240.html">http://www.uni-goettingen.de/de/37240.html</a>**</td>
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<tr>
<td>Universität Göttingen</td>
<td>Sustainable Forest and Nature Management</td>
<td>M.Sc.</td>
<td><a href="http://www.uni-goettingen.de/de/59550.html">http://www.uni-goettingen.de/de/59550.html</a>**</td>
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**e) Other social sciences of sustainable development**

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<tbody>
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<td>Leeds Metropolitan University</td>
<td>Urban Environmental Design</td>
<td>M.A.</td>
<td><a href="http://prospectus.leedsmet.ac.uk/main/list.htm">http://prospectus.leedsmet.ac.uk/main/list.htm</a>**</td>
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<tr>
<td>Liverpool John Moores University</td>
<td>Outdoor Education with Environmental Education</td>
<td>B.Sc.</td>
<td><a href="http://www.ljmu.ac.uk/courses/undergraduate/84744.htm">http://www.ljmu.ac.uk/courses/undergraduate/84744.htm</a>**</td>
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f) Environmental Engineering and Technology

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<td>HAW Hamburg</td>
<td>Environmental Engineering</td>
<td>M.Eng./B.Eng</td>
<td><a href="http://www.haw-hamburg.de/studiengaenge.html">http://www.haw-hamburg.de/studiengaenge.html</a></td>
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<tr>
<td>Queen’s University Belfast</td>
<td>Environmental Engineering</td>
<td>M.Sc.</td>
<td><a href="https://qolps.qub.ac.uk/find_a_course/NEW_apply_now_taught.php?p_id=37&amp;sessions=0809">https://qolps.qub.ac.uk/find_a_course/NEW_apply_now_taught.php?p_id=37&amp;sessions=0809</a> &amp;subjects=40&amp;int=0</td>
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<tr>
<td>TU Freiberg</td>
<td>Environmental Engineering</td>
<td>B.Sc./M.Sc.</td>
<td><a href="http://www.tu-freiberg.de/studium/uwe.html">http://www.tu-freiberg.de/studium/uwe.html</a></td>
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<tr>
<td>University of Leeds</td>
<td>Civil and Environmental Engineering</td>
<td>M.Eng.</td>
<td><a href="http://tldynamic.leeds.ac.uk/ugcoursefinder/2008/course.asp?id=1506">http://tldynamic.leeds.ac.uk/ugcoursefinder/2008/course.asp?id=1506</a></td>
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<td>Functions of members</td>
<td>Name of committee</td>
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<td>Other university administration</td>
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<td>Other services</td>
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<td>Student services</td>
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7.4 Appendix 4 – Members of environmental and sustainability committees and working teams

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<tr>
<th>Name of committee</th>
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<td>Other services</td>
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<td>Student services</td>
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<td>Student union</td>
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<td>Other services</td>
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</table>
Appendix 5 – Supplementary literature and Internet links

a) Sustainability at institutions of higher education


Campus Sustainability Assessment Project, URL: http://csap.envs.wmich.edu/pages/intro_overview.html


ULSF – University Leaders for a Sustainable Future, ULSF database of good practice examples, URL: http://www.ulsf.org/cgi-bin/search.cfm

ULSF – University Leaders for a Sustainable Future, ULSF University and College Sustainability Websites. URL: http://www.ulsf.org/resources_campus_sites.htm


b) Networks

EcoCampus. URL: http://www.ecocampus.co.uk/.

82 (83)
Green Schools Alliance. URL: http://www.greenschoolsalliance.org/index.html.


c) Examples of Student Sustainability Guides


Towards Sustainability. A report serie from the Sustainability Profile work at Mälardalen University

All reports can be downloaded in PDF format at www.mdh.se.

Towards Sustainability 2008:1
Strategic Analysis of PhD Studies and Education on the Masters Level in the Area of Sustainable Development (2008). By Lena Widefjäll. The Report is in Swedish: "Omvärldsanalys av forskarutbildningar och utbildning på avancerad nivå inom området Hållbar utveckling”.

Towards Sustainability 2008:2
Inventory of Sustainable Development in Courses and Programmes at Mälardalen University (2008). By Lena Widefjäll. The Report is in Swedish: "Inventering av hållbar utveckling i kurser och program vid Mälardalens högskola”.

Towards Sustainability 2008:3
Sustainable development is a major challenge for the present and future society. Universities have a central role in the process for sustainable development and this includes all activities of higher education: research, education, contacts with society in large and how everyday operations are run. It is therefore important that universities actively engage with knowledge and learning about sustainable development, not the least that the engagement of students and teachers increase.

The report Setting a good example. Good practice of sustainable development in institutions of higher education is in English. 49 universities in Germany and United Kingdom and their everyday operations are analysed in many different ways such as administration and education, among students and teachers, aiming at energy saving and development of technology. An analysis of relevant criteria results in ten criteria of what could make up a sustainable university. The report presents as many as 360 illustrations that inspire us at Mälardalen University and hopefully others around Sweden and elsewhere.

På hållbar väg 2008:3.
En rapportserie från profilarbetet vid Mälardalens högskola avseende hållbar utveckling
(Towards Sustainability 2008:3. A report serie from the Sustainability Profile Committee at Mälardalen University)