Sustainability at Universities: Degrees of Institutionalization for Sustainability at German Higher Education Institutions—A Categorization Pattern

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Abstract

Fostering sustainability at universities, and especially its institutional implementation has increased worldwide in recent years due to the global challenges that come along with climate change, the growing consumption of natural resources, and the transformation of science as well as educational systems. In Germany, different approaches of implementing the notion of sustainability at higher education institutions (HEIs) can be observed: Some HEIs focus on topics of sustainability in their curricula and study programs and conduct corresponding research projects, others relate to sustainability as an overall governance concept and define their organizational profiles accordingly. Some HEIs use a systematic Whole Institution Approach to implement Education for Sustainable Development (ESD) while some others have redesigned single parts of their institutional structures, e.g. to reduce their universities' ecological footprint. How can the various activities for sustainability at HEIs be typologized and evaluated? Based on a screening of sustainability reports and websites of German HEIs, this paper will identify four different degrees of sustainability-institutionalization in order to offer a categorization pattern that can be used for a rough estimation as well as a self-assessment-tool. This paper also specifies related prototypical examples to showcase various approaches to

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institutionalize sustainability at German HEIs. Limitations and further research perspectives are discussed. Additional questions that may be considered in order to enhance HEI's internal sustainability actions are posed.

Keywords

Higher education institutions · Sustainability · Institutional implementation of sustainability · Sustainability reporting

1 Introduction

Against the backdrop of rising societal challenges such as climate change, resource scarcity, poverty, and social injustice the globally discussed topic of sustainability continues to be highly relevant. At the end of September 2015, as part of the UN Sustainable Development Summit, 17 Sustainable Development Goals to be achieved by 2030 were agreed on by the international community as to provide a framework for the future development of society and to guarantee the continuation of the Millennium Development Goals.[1]

As institutions of society, higher education institutions (HEIs) such as universities and universities of applied sciences, which build the core of the science system including their three task fields of research, teaching and services, are also responsible to contribute to the future-oriented development of society. A future-oriented development nowadays is increasingly guided by the principle of "sustainability" (HRK position paper 2009, p. 2). Therefore, it can be assumed that sustainability-related issues are taken into account in almost every HEI today and that the awareness for sustainability at HEIs is definitely increasing (cf. Lozano et al. 2015); however, in which form and to which extent this is happening exactly, has to be specified in more detail.[2] Meanwhile, a common practice is the integration of sustainability issues into research, the inclusion of sustainability-oriented topics in teaching, and the organization of sustainable campus operations (see e.g. Deutsche UNESCO-Kommission 2011). Moreover, developing and/or signing declarations on sustainable development has become more and more attractive for HEIs (cf. Wright 2002; Lozano et al. 2013).

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[1]https://sustainabledevelopment.un.org/index.php?menu=1300.

[2]As far as the authors of this paper know, there aren't any similar considerations yet about specifying types and degrees of institutionalizing the notion of sustainability at HEIs, although it has to be recognized that there is a growing number of valuable publications dealing with conceptualizations and appropriate ways of operationalizing sustainability at HEIs, e.g. the works of Müller-Christ (2013), Holdsworth and Thomas (2015), Palma and Pedrozo (2015) and Lozano et al. (2015).

Leal Filho (2015, p. 5–6) differentiates between three main manifestations of implementing sustainability in universities which are currently just slightly overlapping: (1) An individual approach, in which the implementation of sustainability within a university is driven by individual persons; (2) A sectoral approach which describes that sustainability approaches are only implemented by individual faculties; and (3) An institutional approach, which comprises a commitment from the whole institution with regard to sustainable development.

The aim of this paper is to expand those considerations, to present and to discuss different approaches of institutionalizing sustainability at German HEIs, and to offer a rough classification scheme with respect to the degree of institutionalization at HEIs. The paper will provide an overview of sustainability-related activities and their institutionalization at German HEIs. Based on this, reflections on how to further operationalize the institutionalization degree of sustainability at HEIs will follow. Therefore, the focus of this paper is based on the question: Which forms of institutionalization of sustainability at German HEIs do currently exist and to what extent could they be typologized? The primary aim of this paper is to contribute to further discussions of sustainability processes and their implementation at HEIs and to encourage clarification and research on processes of institutionalization within the context of sustainability.

2 Approach

This paper is based on the assumption that HEIs that are publishing sustainability reports are already on the way to institutionalize the notion of sustainability and can trigger incremental changes, cf. Ceulmans et al. (2015). (Of Course, also HEIs without sustainability reporting or HEIs that have possibly integrated the topic of sustainability in other reports may be on a way of institutionalizing sustainability; however, at this point, they remain unconsidered due to constraints that come along with the chosen and applied approach).

As a starting point for the considerations in this paper, the study of Sassen et al. issued in 2014 is used. As to this study, sustainability reports from 13 German universities were available at that time.[3] These 13 sustainability reports were screened by the authors of the present paper in order to identify documented structures and/or approaches regarding the institutionalization of sustainability at the respective universities. In addition, and with the same objective, homepages and organizational charts of the respective universities were sighted. Here, a search for the keyword "sustainability" at the start website (and possibly secondary sites) took place. Furthermore, there was a search for faculty and/or research activities with a special focus on sustainability. Moreover, the organizational charts of the respective

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[3]Currently, more sustainability reports are available from even more German HEIs. The authors of this paper decided to limit information about HEIs to those out of the study from Sassen et al. (2014) due to practical reasons.

universities were reviewed in order to see whether sustainability, environmental or energy managers or sustainability departments are in place at the respective university. All in all, the proceeding described above is not meant as a methodologically comprehensive study. Nevertheless, the selected approach allows a more in-depth look at existing, documented sustainability activities and structures of the respective institutions.

As a frame of reference for the understanding of the term "institutionalization" of sustainability or sustainability activities in this paper, the following has been defined[4]: A legitimate and stable long-term structure within a HEI which sets the frame that the sustainability activities of the respective HEI are deliberately designed, ordered, directed, and that their implementation is supported within the HEI.

Overall it is distinctly clear that HEIs internally develop the complex and abstract topic of sustainability in individual and quite different ways and therefore also deal differently with the concern and the requirement to institutionalize sustainability. In some HEIs, sustainability is targeted input to individual curricula and study programs whereas in other HEIs subjects related to sustainability are ubiquitous and can be referred to as a "Whole Institution Approach" which covers all areas of the university. At some HEIs, sustainability is perceived as governance concept and anchored in the steering apparatus of the university, while other universities dedicate themselves directly to the topic of sustainability with their complete organizational profile.

Table 1 in the appendix summarizes the results of the screening of the 13 sustainability reports and of the websites of the universities concerned and it allows a more detailed insight to the database for the subsequent considerations.

3 Degrees of Institutionalization of Sustainability at German HEIs—A Rough Systematization

Using the results of the screening mentioned above, the authors of this paper suggest the following systematization pattern—which is meant to offer a rough orientation considering different degrees of sustainability-institutionalization at HEIs:

I. Degree of Institutionalization (DI) 1: single sectoral activities dealing with sustainability issues (activities are not interconnected)
II. DI 2: a governance-concept of sustainability
III. DI 3: Whole Institution Approach
IV. DI 4: Sustainability as an institutional profile

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[4]A similar comprehension as put forth by Heinrichs and Laws (2014) in analyzing German Federal Policy in general, though no explicit definition of "sustainability institutionalization" is given in that paper.

Table 1 Results of the screening of 13 sustainability reports and of the websites of the Universities/Universities of Applied Sciences

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
Carl von Ossietzky Universität Oldenburg Carl von Ossietzky University of Oldenburg	Nachhaltigkeit an der Carl von Ossietzky Universität Oldenburg – Ein Bericht von Studierenden (2013) www.uni-oldenburg.de	SR • Accompaniment of the process SR by "Team Sustainability Reporting" (members: Researchers + Teachers + "practitioners") (SR mainly developed by students + editorial team) + "Team Energy Management" (administrative staff + students) (Students Initiative) • Specific courses with S reference: Master Cluster Environment and Sustainability (7 Masters courses with specific thematic priorities) Website • SR to find among "university"/"profile" • Research on S named as a research priority
Universität Kassel University of Kassel	Universität Kassel Heute für Morgen – Erster Bericht zur Nachhaltigkeit in Forschung, Lehre und Betrieb (2014) www.uni-kassel.de	SR • Reporting by Editorial Team • Further development of research priorities and programs related to S • Thematically focused competence centres • Ecological S: establishment of a centralized Commission as an advisory body for the university's Steering committee • Social S: representatives of different status groups composed in different commissions assist the university's Steering committee (e.g. Equality Commission, strategic human resource development etc.) • Officer for environmental S • Vice-Presidents are responsible for social aspects of S Website • Emphasizing the following topics in "About us": –Environmental U –Equality, family and diversity • Anchoring of S in the university's overall concept available in German + English • SR available • S is not visible in the organization chart

(continued)

Table 1 (continued)

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
Hochschule für nachhaltige Entwicklung Eberswalde Eberswalde University for Sustainable Development	Offengelegt. Bericht zur nachhaltigen Entwicklung unserer Hochschule 2012/2013 (2014) www.hnee.de	SR • HNEE relies exclusively on key areas directly related to S (energy efficiency, regional management, nature conservation, sustainable tourism, organic farming etc.) • 17 degree programs with directly related to S • Principle of HNEE: S as an integrative and overall University concept Website • The concept of HNEE as an UAS for S is apparent (in specialist areas, research areas, dedicated persons etc.)
Universität Duisburg-Essen University of Duisburg-Essen	Jahresbericht 2010/2011 – Nachhaltige Entwicklung an der Universität Duisburg-Essen (2011) www.uni-due.de	SR • SR as a result of a project at the university (project BENA (inventory of sustainability/supported by the Rector of the university)—BENA is initiated by the Initiative for more Sustainability eV— founded in 2005 as a student university group • Inventory of S activities by students, graduated volunteers and employees • SR serves to initiate internal dialogue • University commitment to S: Signed Copernicus Charter, 2004 Establishment of a group which bundles expertise in the field of "sustainable development" • Appointment of an S representative in 2009 (but acts purely as a point of contact for internal and external S actors, has an intermediary role, mandate is to build networks + initiate measures related to S) • Structure: Initiative for more Sustainability eV, S representative and BENA project established • Next steps: Systematic integration of S in the strategic management of the U Website • Structures of S is not clearly obvious on the homepage—only diversity management and gender portal named • S structure not included in the organizational chart (except Equal Opportunities Officer)

Table 1 (continued)

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
Leuphana Universität Lüneburg Leuphana University of Lüneburg	Schritte in die Zukunft – Nachhaltigkeitsbericht 2013 (2014) www.leuphana.de	SR • S is part of the university culture • Own sustainability faculty established • Definition of sustainability guidelines within the U • 2013 Award for the successful integration of S in all spheres of academic life at the U • Target: development towards a "Sustainable University" Website • S as a focal point quickly obvious • S anchored in the mission statement (incl. concrete description of what S means in detail for the U), own faculty
Universität Bremen University of Bremen	Nachhaltigkeitsbericht außen 2010 (2010) www.uni-bremen.de	SR • Definition of sustainability and environmental guidelines—including: institutionalization of sustainability and environmental protection: –Bodies of the U support in the implementation of S in research, teaching, administration and student operation –Development of a S and environmental Programme in which objectives and measures are described and communicated –Program serves as basis to continually improve S and environmental performance of the U • Artec Research Centre for S as an interdisciplinary center of the U Website • S is (relatively far back) cited as a key objective of the U • Artec named as Research Centre and central scientific institution for S in the organizational chart of the U
Katholische Universität Eichstätt-Ingolstadt Catholic University of Eichstätt-Ingolstadt	Nachhaltigkeitsbericht 2013 (2014) www.ku-eichstaett.de	SR • Topic of S defined in the strategic paper "ESD—Vision and mission of the Catholic University of Eichstaett-Ingolstadt" published in 2010 • S as a core element in research, teaching and campus life

Table 1 (continued)

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
		• Award of the U's S concept in 2013 as a UN Decade project • Sustainability Officer = professor appointed by the university management (+steering group) + Campus Environment Manager in place • Chancellor as a contact person for the entire area of S Website • Topic of "Sustainable Catholic University" easy to find ("Our Catholic University") • S concept and SR available • Concrete institutionalization clear and significantly plausible, however, S is not included in the organizational chart
Universität Hamburg	Nachhaltigkeitsbericht für die Universität Hamburg 2010/2012 (2011) www.uni-hamburg.de	SR • SR issued by non-profit student association Oikos Hamburg • Establishment of the "Competence Centre Sustainable University" (KNU) in late 2011 Website • Link to the KNU easy to find ("Profile—Sustainability")
Hochschule Zittau/Görlitz Zittau/Görlitz University of Applied Sciences	Nachhaltigkeitsbericht der Hochschule Zittau/Görlitz 2009 – "Bewusst werden, bewusst handeln" (2010) www.hszg.de	SR • Environmental Management Officer + Environmental Coordinator/Specialist on Work Safety in place • Focus of S initially on the operation/environmental aspect of S • Environmental Policy Statement of the UAS in the SR • Statement on "sustainable construction" at the UAS in the SR Website • Under "College—Management Systems" the Environmental Management System including S can be found

Table 1 (continued)

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
		• S is not explicitly included in the mission statement of the UAS nor named in the structure—only Institute of Ecology and Environmental Protection is named
Hochschule Trier – Umwelt Campus Birkenfeld Trier University of Applied Sciences - Environmental-Campus Birkenfeld	Nachhaltigkeitsbericht 2012 – Grünste Hochschule Deutschlands - Die drei Säulen der Nachhaltigkeit "Ökologie, Ökonomie und Soziales" am Umwelt-Campus Birkenfeld (2012) www.umwelt-campus.de	SR • Focus "Environmental Campus" • Only "Zero Emission University" in Europe • Title "Greenest University" in 2011 (followed by Eberswalde (2) and Leuphana (3)) • S council (10 persons) established which includes all departments of the Environmental Campus which deal with S—1st priority of the council "to address environmental issues that are relevant to the campus" • S representative as a member of the council Website • Explanation of the Green Campus concept on the website ("Campus—Campus Green concept")—SR also available here • Divisions with S relation
Hochschule Heilbronn Heilbronn University	Aspekte der Nachhaltigkeit 2011 (2011) www.hs-heilbronn.de	SR • Council for Sustainable Development at the UAS • SR written as a Bachelor thesis • S included in the mission statement of the UAS • Direct assignment of the S management system and the S representative (organized within a department) to the UAS Rector—supports the UAS steering board with S related issues • S unit organized within the student council • Senate Representative for SD (organization of lectures, seminars, events, etc. on the subject of S in addition to the curriculum + member in overarching networks) • SD manager (50 %) position = continuous development of UAS in research, teaching and operations related to S

(continued)

Table 1 (continued)

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
		• "Studium Generale" and lecture series on topics related to man—environment—future Website • S included as a fundamental value in the mission statement of the UAS (but not further mentioned in the organizational chart) • S with a particular focus on transport and logistics compiled in a research institute within the UAS • SR not available on the website
Universität Bayreuth University of Bayreuth	Nachhaltigkeitsbericht Universität Bayreuth 2007/2008 (2008) www.uni-bayreuth.de	SR • SR issued in collaboration with student organization, working group "Sustainable Economy"/oikos Bayreuth eV (U Administration supplied data) • BayCEER (Bayreuth Center of Ecology and Environmental Research)—cooperation of 20 professors from the fields of biology and earth science • 2005 Foundation of the "Research Centre for the right for sustainable development" (organizing lectures (e.g. S in frame of the German political system) and implementation of projects) • S in study courses + research projects Website • S as a field of research within U profile: Governance and Responsibility • Additional profile fields: Ecology and Environmental Sciences; Energy Research and Energy Technology • S not mentioned in the organizational chart and not explicitly mentioned in the mission statement of the U

Table 1 (continued)

German Higher Education Institution (HEI)	Title of the sustainability report incl. (publishing date) and website address of the HEI	Documented structures/approaches of institutionalizing sustainability
Technische Universität Kaiserslautern University of Kaiserslautern	Nachhaltigkeitsbericht TU Kaiserslautern 2013/2014 (2015) www.uni-kl.de	SR • Project "Sustainable University of Kaiserslautern" established at the U to steer the sustainability process at the U in a structured way • SR as a base and basis for discussion for the development of a SD strategy Website • S not mentioned on the website

DI Degree of Institutionalization
HEI Higher education institute
ESD Education for Sustainable Development
SR Sustainability Report
S Sustainability
SD Sustainable Development
UAS University of Applied Sciences
U University

The following section describes this systematization in more detail (criteria for different degrees of institutionalization). Moreover, each of the suggested DIs is specified by a prototypical example of a German HEI to illustrate the criteria of institutionalization.

I: Degree of Institutionalization 1: sectoral single activities for sustainability
This DI can be identified by the presence of single sectoral activities for sustainability at a HEI. These activities may take place within research, teaching and/or service operations. Nevertheless, these activities for sustainability are not interrelated or coordinated. Thus, sustainability related activities are given in one or more fields of action but they are only institutionalized to a very small degree: Integration of these activities into the organization's structures is barely given. Although single and sectoral activities for sustainability are important and necessary to foster the notion of sustainability in the HEI context, more structured and in-depth approaches are needed to truly institutionalize sustainability in the long run.

DI 1 can be described as subsuming all HEIs that do have various single activities for sustainability either in research, teaching or operation—separately or in all of these fields together. A HEI for example, which offers different student courses on sustainability topics or that is active within ESD in general, but doesn't clearly address sustainability within service operations and administration, would be categorized as DI 1. Even if there are activities in research for sustainability and sustainable development in education/teaching and operations all together, a HEI

would be categorized as DI 1 as long as there is a missing clear structure of connecting and integrating these several sustainability activities for the whole HEI. This DI more or less reflects the implementation of sustainability as described in approach 1 and 2 by Leal Filho (see above).

Based on the authors' screening of 13 German HEI sustainability reports (see section "Approach"), examples for addressing sustainability topics in teaching and education in general are: Announced lectures and/or seminars for sustainability; degree programs that deal with sustainability from a disciplinary or an interdisciplinary point of view. Most HEIs also relate to sustainability as a research topic and thus are—more or less active—in scientific inquiries on sustainability issues. Some HEIs pool degree programs and research on sustainability to build so called Clusters. Examples for addressing sustainability in service operations and administration are: explicitly including ecological considerations on campus; holding certificates for eco-management systems or similar activities.

Exemplifying DI 1, the University of Oldenburg serves as a prototype description: At the University of Oldenburg seven Master programs related to sustainability issues (e.g., "European Master in Renewable Energy", "Water and Coastal Management", "Sustainability Economics and Management") are pooled within a so called "Master Cluster Sustainability", focusing on education and teaching for sustainable development. Students of any one of the Cluster programs can choose to take classes of other programs beyond the Cluster, therefore qualifying interdisciplinary according to their special interests. A focus is given to transdisciplinary exchange between students and practitioners. The Master Cluster is described as being the centerpiece of ESD at the University of Oldenburg (sustainability report Universität Oldenburg 2013, p. 17). Research on sustainability-related topics is also given, emphasizing scientific marine and costal research as well as renewable energies (sustainability report Universität Oldenburg 2013, p. 20). Moreover, specialized research centers such as "COAST—Center for Ecology and Sustainability Research" exist at the University of Oldenburg. According to the university's 2013 sustainability report, there is also engagement for implementing sustainability activities within service operations. All in all, there are a lot of sustainability-related activities to be found at the University of Oldenburg, in research as well as in teaching and campus management. But neither the considered sustainability report nor the university's websites provide information on a superordinate structure aimed at integrating these various activities and thus no clear institutionalization of sustainability can be found. E.g., there seems to be no declared sustainability officer responsible for fostering sustainability issues for the university as a whole.

II: Degree of Institutionalization 2: Governance Concept of Sustainability DI 2 refers to an institutionalization of sustainability at a HEI where there are first steps of building a structure for implementing sustainability-related actions by taking account of them as a baseline for a concept of HEI government. Thus, DI 2 exceeds DI 1 clearly, because the topic of sustainability in this case has become so important that it gets commitment from higher levels of the HEI management. Sustainability is fixed as a core value of the university and structures for transformative processes

are set up. DI 2 is given when provosts explicitly and systematically refer to sustainability as a key concept for their HEI's orientation and foster HEI development towards integrating sustainability issues in all given structures. Indicators for DI 2 are, for example: an overall institution or a committee that addresses sustainable development of the HEI as a whole (not only within single faculties or selected fields of action) is given; there is a sustainability officer or a similar position responsible for sustainability-related topics within the HEI administration. I.e. structures for specifically and continuously working on the institution-wide implementation of sustainability in research, education and operations exist and are significantly involved in governing further steps of the HEI. All in all, DI 2 refers to basic steps towards a long-term implementation of structures for sustainability-related actions which still are under formation. But—in differentiation to DI 3 (see below)—there aren't any central departments for sustainability and for the coordination of overall sustainability issues resources aren't allocated yet. Networks of faculties and other HEI department specialized on sustainable development are only rudimentary and still only a small number of participants and players are involved. There is more of a connection between sustainability-related activities in research, teaching, and operations than there would be within DI 1, but still these connections are only loose, rather uncoordinated and unstable.

Exemplifying DI 2, the University of Applied Sciences Heilbronn serves as a prototype description: Sustainability is explicitly mentioned in the mission statement of the Heilbronn University of Applied Sciences. There is an organizational sustainability council which initiates and coordinates sustainability-related activities and has a consulting function for sustainability topics at the university. A representative for sustainable development authorized by the university's senate can be contacted by staff and students for questions and claims concerning sustainability and also offers presentations and additional programs on sustainability topics. A sustainability officer organized within a department directly linked to the rector supports central sustainability activities of the university. Additionally, an internal sustainability consultant promotes the university's transformational processes towards sustainability implementation in teaching, research, and operations (sustainability report Hochschule Heilbronn, S. 6–7).

III: Degree of Institutionalization 3: Whole Institution Approach for implementing sustainability DI 3 describes a Whole Institution Approach to sustainable development: All fields of action—research, teaching, service operations and campus management—as well as ecological, economic and social issues are addressed as balanced as possible and systematically related to each other. The main goal is an integration of different stakeholders, different topics and interests referring to sustainable development, including all faculties and science as well as administration.

Main differential between DI 2 and DI 3 is a profound coordination of the different fields of action for sustainability at HEIs and a clear structure of integrative implementation of activities. Information on sustainability issues is clustered within this comprehensive structure which is built to professionally foster the HEIs' sustainable development. Networks and cooperation for sustainable development are

stimulated and supported—at the HEI internally and beyond. Compared to DI 1 and 2, DI 3 represents a stronger forming of sustainability-institutionalization. DI 3 is similar to Leal Filho's (2015) institutional approach mentioned above, specifying further criteria of coordination and structure.

Exemplifying DI 3, the University of Hamburg (Universität Hamburg, UHH) may serve as a prototype description: At the UHH, the Center for a Sustainable University (Kompetenzzentrum Nachhaltige Universität, KNU) was established in 2011(see also Schneidewind and Singer-Brodowski 2013). The KNU brings together expertise from all areas and disciplines to focus on sustainability related issues in order to shape the UHH as a "Sustainable University". The KNU acts as a research network, a laboratory for innovation and an incubator for new approaches, concepts, procedures and methods in the context of sustainability. It accompanies and supports transformational processes at the UHH. The KNU includes all parts of the UHH (i.e. faculty, students, administration and operations) and implements transformational projects and methods at an organizational level. The UHH's sustainability activities are coordinated and systematically clustered there. Four reference dimensions for university-wide sustainability trigger the development of theoretical and practical perspectives on: (a) reflection on science (e.g. what does sustainability in science actually mean? Which system changes in science are necessary to achieve global sustainable development in the long run?), (b) research (e.g. how can sustainable development be defined and developed?), (c) didactic (e.g. what are the characteristics of sustainable education? And how can it be facilitated?) and (d) institutional (e.g. what is sustainable governance? How can sustainability-oriented operations be achieved?) (cf. Bassen et al. 2013). Five interdisciplinary teams and the coordinating office of the KNU support various aspects of sustainable development at the UHH and in society in general. The KNU not only initiates research projects regarding sustainability and sustainable development issues but also in cooperation with the student initiative oikos Hamburg e. V. works on UHH sustainability reporting processes, launches activities and events at campus, etc. Besides offering sustainability-related degree programs (e.g. Master of International Business and Sustainability), hosting specialized sustainability-related research centers (such as "CEN—Center for Earth System Research and Sustainability" and "Integrated Climate System Analysis and Prediction (CliSAP)") and addressing sustainable campus management issues (energy use, recycling, mobility), the UHH also increasingly takes care of professionalizing her sustainability-related organizational development, networking and internationalization. The KNU therefore operates using a Whole Institution Approach for sustainable development and contributes to an overall institutionalization of sustainable development within the UHH (see www.nachhaltige.uni-hamburg.de).

IV: Degree of Institutionalization 4: Sustainability-related organizational profile A clear-cut institutionalization of sustainability exceeding all the so far mentioned DIs is given, when a HEI explicitly and titular refers to sustainability as its mainly focused topic for research, teaching and operations: In cases like this, sustainability-related issues are integral part of the HEI's scientific and

organizational profile, not only incorporating sustainability as one topic amongst others but exclusively dealing with it. DI 4 marks sustainability as a unique and sole "selling point" of a HEI, leaving other research and teaching topics behind.

Exemplifying DI 4, the University of Applied Sciences for Sustainable Development in Eberswalde (HNEE) may serve as a prototype description: Sustainability is rooted in the name and organizational profile of HNEE. The one and only focus of HNEE is research, teaching and operations for sustainable development, offering degree programs such as "Forest Information Technology", "Regional Development and Nature Conservation" and "Sustainable Tourism". HNEE's mission is to research sustainable development, to teach, and to provide the society with the research results. With respect to students, its employees, cooperation partners, the economy, society and nature, it is responsible for teaching concrete concepts for sustainable actions as well as learning how to self-apply those concepts (see sustainability report of HNEE). HNEE is climate neutral and describes itself as greenest university of Germany (www.hnee.de). Since the HNEE is a University for Applied Sciences,[5] its' spotlight is on practical and application topics related to sustainable development.

4   Discussion

By suggesting these four different types of institutionalization for sustainability at HEIs, a theoretical systematization as well as a rough range of increasing sustainability-implementation is described. It serves as one possible operationalization-scheme for DIs related to sustainable development at HEIs: The DI is estimated according to information given within sustainability reports and websites about organizational structures related to sustainability. The authors used prototypical examples of single German HEIs to illustrate the DIs, which can be seen as an exploratory pragmatic approach rather than an in-depth empirical study. While working on the so far suggested categorizations, the authors of this paper generated the systematization pattern by iteratively defining and checking criteria for each DI. It should be noted, however, that although theoretical definitions and differentiations between the DIs can be made, empirically there might be cases that can't be consequently assigned to one of the DIs. Further research is necessary to evaluate objectivity, reliability and validity as well as practicability of the scheme and the DIs respectively.

Important to bear in mind is also the fact that by using the scheme and trying to estimate a HEI's DI—as a self-assessment tool, for example—no conclusion about the success of the considered sustainability activities and structure can be made. The scheme should mainly serve as a (self-)orientation pattern, not as an evaluation

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[5]In Germany, a university and a university for applied science "Fachhochschule"/"Hochschule für Angewandte Wissenschaft" are comparable with the difference between universities and colleges in the United States.

method in general. It gives instructions on how to range degrees of institutionalization for sustainability at HEIs, thus allowing statements that refer to "more or less" of sustainability-institutionalization, but not as a measurement in the sense of scaling.

Moreover, the methodological approach, the systematization pattern (DI-scheme) and the selection of prototypes in this paper have to be discussed further: All of them need more empirical validation; neither the DIs nor the HEIs chosen as prototypical examples prove anything; other prototypes might have been chosen and other DIs identified in different contexts. The methodological approach presented in this paper is not exhaustive—because it was not conducted within a particular research project or ongoing study, but rather evolved as a "rapid model" from a vocational context of the authors—and should be elaborated in further papers.

To prevent misinterpretations concerning the suggested different degrees of sustainability-institutionalization, one should note that a "higher" degree is not necessarily identical with a "better" implementation of sustainability-related actions and structures: Each HEI has its own institutional history and might be more or less imprinted for institutionalizing sustainability. It has to be stated that (a) designing an organization's/HEI's institutional profile through sustainability (as represented in DI 4) is very different from the concern to integrate awareness and capacity for sustainable development issues into given and established structures in general (DIs 1–3). Whereas some HEIs might favor to exclusively focus all of their research, teaching, and operations on sustainability-related topics and activities—see as an example the HNE Eberswalde, a university that by now has 1979 students and 216 staff members; founded in 1992[6]—some other HEIs, as the UHH, for example (more than 40,000 students, round about 5000 staff members, founded in 1919), seek to keep their organizational identity as a "Volluniversität", incorporating many long established faculties and disciplines. HEIs like these might focus on processes how to appropriately address different member groups in order to integrate awareness and capacity for sustainability in all of its established structures and fields of action step by step and trying to keep up other topics and research specializations as well.

In sum, to achieve the UN's Sustainable Development Goals for 2030, all HEIs will have to adopt and care for the topic of sustainability, in one way or another. This means that the "baseline" for sustainability at HEIs will rise anyway. Sustainability concerns have to be integrated at each single HEI individually. But imagine all HEIs profiling exclusively for sustainability, leaving other topics and specialization aside. That wouldn't be useful for education in general and would reduce the type of diversity that is prevalent at universities and can't be cast aside.

Finally, the question might be posed if the suggested DIs—serving as a rough categorization pattern only—are sufficient to represent key institutionalization forms of sustainability at HEIs. Are four different "types of institutionalization" enough to appropriately differentiate HEIs and their individual processes towards

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[6]Sassen et al. (2014) respectively to the date of foundation http://www.hnee.de/de/Hochschule/Portraet/Portraet-K292.htm [in 1992 the present HNE Eberwalde came out of the in 1830 founded *Höheren Forstlehranstalt*].

implementing sustainability? Probably not! This paper aims at fostering discussions at HEIs (and beyond)[7] about how to achieve structural transformations towards sustainability. It wants to offer new perspectives on how to operationalize the advancement of sustainable development at HEIs. Of course, these ideas and perspectives are only approximations to a yet evolving field of investigation. The authors of this paper want to stimulate further elaboration of the suggested scheme and don't claim it to be thorough yet. Based on the work for this paper as well as from the viewpoint of the authors practical experience in dealing with sustainability implementation at HEIs, considering additional factors for operationalizing DIs is recommended. The following characteristics might be taken into account:

– *size, location and individual history of the HEI (year of foundation; "traditions"; established HEI organizational culture)*: These factors might have an impact on "time to sustainability institutionalization" und thus influence a DI. More research is necessary to clear up empirical relations between DIs and specific organizational variables.
– *reactive versus proactive behavior*: Is the orientation towards implementing sustainability at the respective HEI triggered from the inside of the institution (proactive), e.g. because provost, students, professor, staff consider it to be a truly relevant topic? Or is it triggered by outside factors such as competition or official government regulations (reactive) (on this topic, cf. Ceulmans et al. 2015, for example)?
– *integrative versus exclusive attitude*: Is the transformation towards sustainability driven by an attitude of integrating different perspectives and thus pointing out the potential that lies within change? Is an openness to change part of the activities that mean to foster sustainability (inclusive)? Or is the transformation towards sustainability mainly seen as a trait for a selected elite only, driven by an attitude that excludes relevant stakeholders (exclusive)?
– *participation versus enforcement processes*: Does an HEI rely on participation processes which enables different groups to share their own perspective on sustainable development and to come up with their own ideas for generating a Whole Institution Approach of fostering sustainable development? Is collaboration seen as a core value for transformational processes (participatory)? Or is an orientation towards collaboration on sustainability topics ruled by regulations and enforced upon people within the structures of the HEI (enforcement) (on this topic, cf. Disterheft et al. 2015, for example)?
– *incentive trend versus virtue*: Why do HEIs increase their activities regarding sustainability issues? Is the main incentive for HEI (and its members respectively) the ongoing "trendiness" of this topic, accompanied by better fundraising

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[7]A "sustainability self-assessment" for HEI, offered by Müller-Christ in „Hochschulen für eine nachhaltige Entwicklung – Ideen zur Institutionalisierung und Implementierung" (2013; S. 64–67) and in „Hochschulen für eine Nachhaltige Entwicklung. Nachhaltigkeit in Forschung, Lehre und Betrieb" (2011; S. 60–71), which should promote an internal discussion at HEIs about implementation and institutionalization of sustainability. Further provides this assessment a concept for an internal self-checking about the current situation of implementing sustainability.

possibilities and other extrinsic reasons (trend)? Or are HEIs (and their members respectively) motivated by intrinsic and pro-social reasons, e.g. because responsibility for future generations is perceived as important ("virtue")?

– *interpretation holistic versus isolated*: Is sustainability interpreted as a holistic notion that ties ecological, economic, social and cultural dimensions together and aims at illuminating their interconnections? Is it seen as a systemic and multi-perspective topic of transformation (holistic)? Or is sustainable development only interpreted from a single dimension or point of view (e.g. restricted to ecological aspects only) in an isolated way, thus suppressing relevant relations that need to be put in an all-together context (isolated) (on this topic, cf. Heinrichs and Laws 2014, for example)?

Although no further ideas about operationalizing the aforementioned characteristics can be presented here, combining these (binary) criteria with the four different DIs suggested in the section above as a matrix could help to more clearly specify occurrences of institutionalization of sustainability-related actions at HEIs. A matrix like this might be used as a detailed self-evaluation tool for HEIs and its results can serve as a baseline for distinct measures and methods to promote implementation and institutionalization of sustainability-related activities at HEIs.

Reflection processes concerned with sustainable development at HEIs might be established, dealing with questions such as: Do we want and are we able to become a university that is particularly focused on sustainability topics, thus fixing our organizational profile on sustainability? Do we want to face societal challenges in a reactive or proactive way? Should the attitude by doing this be rather integrative or exclusive? Are participation processes or enforcement processes more successful in the long run? Should incentives be trend- or virtue-driven? Do we interpret the notion of sustainability from a holistic or an isolated point of view?

Discussing questions like these in different settings at HEIs might help to trigger further research and action of how to implement and to institutionalize sustainability and sustainable development—in German HEIs and abroad.

Appendix

(See Table 1).

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