Change from below – student initiatives for universities in sustainable development

Moritz A. Drupp[a], Alejandro Esguerra[b], Lena Keul[c], David Löw Beer[d], Simon Meisch[e] and Felix Roosen-Runge[f]

[a] *University Tübingen, Friedrich-Dannenmann-Str. 6, 72070 Tübingen, Germany, moritz.drupp@fulbrightmail.org*

[b] *Free University Berlin, Ihnestr. 26, 14195 Berlin, Germany, a.esguerra@fu-berlin.de*

[c] *Ökoworld Lux S.A, Proactiv-Platz 3, 40721 Hilden, Germany, lenakeul@hotmail.com*

[d] *Leuphana University Lüneburg, Scharnhorststraße 1, 21335 Lüneburg, Germany, loewbeer@leuphana.de*

[e] *University Tübingen, International centre for ethics in the sciences and humanities, Wilhelmstraße 19, 72074 Tübingen, Germany, simon.meisch@uni-tuebingen.de*

[g] *University Tübingen, Institute for Applied Physics, Auf der Morgenstelle 10, 72076 Tübingen, Germany, f.roosen-runge@student.uni-tuebingen.de*

Keywords *Sustainable Development, Student Initiatives, Institutional Change, Discursive Institutionalism, Universities*

Abstract *To advance the discussion on how the transformation of universities toward sustainable development may be achieved, the authors examine an often-overlooked actor category: student initiatives. By drawing on a case study of the initiative Greening the University e.V. (University of Tübingen, Germany) the authors conceptualize the role of student initiatives for institutional change through the notion of 'communicative arena'. The authors argue that student initiatives are crucial for the transformation process toward a university in sustainable development for three reasons: they facilitate change by acting as (1) institutional innovator, (2) 'boundary agent', and (3) creator of social and institutional learning spaces. Further, the authors discuss factors that limit a student initiative's potential to unfold its transformative power. The article concludes with recommendations for policy-makers, university leaders and students on how to foster this 'change from below'.*

1. Introduction

Universities play an important role in bringing about change for sustainable development (SD). They contribute expertise required to understand unsustainable processes, to develop alternative sustainable strategies and also to educate future decision-makers. Educational politics is well aware of universities' special responsibility for SD. Since the Talloires Declaration in 1990, many international documents suggested strategies to include SD issues into university policies (see, e.g., Leal Filho, 2011). Universities are not only places of research and learning but also places of living and working, thus leaving "ecological footprints". A sustainable university not only realizes an efficient use of resources and overall ecological viability, but also enables more sustainable work and life styles.

In this paper, the authors are concerned with the role of student initiatives (SIs) for universities in SD. The authors argue that SIs form an important but overlooked actor category in discussions on sustainable universities. While admitting that students are to be included in designing SD policies, key documents on SD at universities keep silent who "the students" are in organizational terms. In most cases students are referred to only as addressees of Education for SD (ESD) but not as participants in the formation of new SD knowledge, as organizers of their own educational success or as initiators of new SD curricula and university-wide institutional change. Among those key documents, only the 2009 Bonn declaration outlined "the commitment, solidarity and potential of youth and their organizations and networks in enhancing ESD", thereby highlighting student organizations.

Within the scientific literature, SIs' potential as change agents is also not fully acknowledged. Furthermore, the scientific literature has not fully acknowledged the potential of SIs as actors in the transformation towards sustainable universities (for notable exceptions see Chapter 2). The central question this paper addresses is: *what role do student initiatives play in the institutional transformation process toward a university in sustainable development*? To theoretically capture the ways in which SIs can foster institutional change, the authors draw on approaches that take discourse, communication, and knowledge, seriously.

Over the last decade, discursive approaches have been proved useful to study environmental politics and institutional change (Hajer and Versteeg, 2005). Among others, scholars elaborated on the notion of discourse coalitions (Hajer, 1995), interpretive communities (Johnstone, 2005), or epistemic communities (Haas, 1992). Vivien Schmidt assembles the variety of concepts under the term "discursive institutionalism" (Schmidt, 2012). The authors follow this school of thought with a special interest for the epistemic and communicative practices within a community.

In particular, the authors probe the analytical power of the term *communicative arenas* to examine how a particular SI has changed its university toward a university in SD. That is to say, c*ommunicative arenas* function as analytical lens to study the transformative process.

Briefly defined, *communicative arenas* are spaces of informal or formal exchange in which a multitude of social actors may meet. Often centered around a specific topic, *communicative arenas* may be organized as spaces with the immediate presence of social actors or also with more mediated forms of communication such as exchanging emails, producing papers, or organizing campaigns (Knoblauch, 2001). The authors claim that the ability of SIs to create, maintain and skillfully control communicative arenas is important for institutional change from below, a change toward a university in SD.

In what follows, the authors shed light on three characteristics of communicative arenas by providing empirical evidence from the work of the SI *Greening the University e.V.* at the University of Tübingen (Germany). First, for SIs, invoking communicative arenas is a means to work as institutional innovator. Second, by transcending the boundaries of the university, SIs may engage in "boundary work", including social actors outside the classical disciplines into the communicative arena (Star and Griesemer, 1989). Third, communicative arenas function as learning spaces for all actors of a university.

Having elaborated on the potential of SIs for institutional change, the authors examine conditions governing SIs' potential to enduring and successful engagement. The authors focus on possible strategies for SIs as well as enabling conditions to be implemented by university leaders and politicians. The authors conclude with a brief summary of the potential role of "change from below" initiatives.

2. Toward a performative understanding of sustainable development: Communicative arenas and student initiatives

The role of student initiatives does not feature prominently within the discussion on sustainability at universities. However, it has been recognized that SIs need to be included in a transformation process as important agents (Lonzano, 2006, Schneidewind, 2009). Further studies emphasize the potential role of SIs as initiators of sustainability processes (Newport et al., 2003) or even as central agents for a full SD process (Krizek et al., 2012). Sharp (2002) puts an in-depth focus on SIs and argues that they are particularly capable to start a SD process because they do not follow the usual rationalities in a university. In addition Sharp (2002) as well as Helferty and Clarke (2009) provide specific advice for SIs in SD processes as well as for universities that wish to support such SIs. This paper adds a detailed case study to this literature and provides a theory-driven discussion of the role of SIs in the institutional transformation process toward a university in sustainable development. By drawing on theoretic approaches that take discourse, communication, and knowledge seriously, this paper adds new depth and insight to the discussion as it can both theoretically explain and empirically demonstrate channels through which SIs can foster institutional change toward sustainable universities.

2.1. Student initiatives as institutional innovators

Analyzing SIs' potential to enact innovations via the creation of communicative arenas, this section describes the evolution of the *StudierendenInitiative Greening the University* (SIGU).[1]

To understand the emergence and early successes of SIGU it is helpful to recall three distinct discursive events in Germany and its educative system five years ago. Firstly, after the fourth IPCC Report in 2007 and the high scientific evidence of the anthropogenic climate change, public actors such as universities found themselves increasingly pressured to address questions of SD.[2] This process was, secondly, paired with the promotion of ESD as a guiding principle for educational institutions during the UN-Decade for ESD (2005-2014). Thirdly, the German federal government initiated a reform process called "Excellence Initiative"[3], in which German universities were encouraged to apply for federal grants with an encompassing individual profile.

In this context, a group of students with diverse academic backgrounds founded SIGU at the University of Tübingen (Germany). In an early position paper, the initiative developed a '*storyline*', linking the climate change discourse to the university's individual responsibility as an educational institution (Esguerra, 2006).[4] Two central themes for *structural change* were put forward by the initiative: first, the reduction of the university's consumption of natural resources and production of waste; for this theme the '*metaphor*' of "ecological footprint" was appropriated (Hajer, 2009; Wackernagel and Rees, 1996). Second, the initiative called for an integrated understanding and promotion of SD within teaching and research.

Having learned about the importance of intense cooperation from the study of sustainability processes at other universities, SIGU created a network with members from the university administration, the student union and academic staff. Also, the initial members worked toward expanding the group, and institutionalized the initiative as a non-profit association.

---

[1] For a more detailed account of the SIGU-case study, see Roosen-Runge et al. (2012).

[2] To avoid misunderstandings, the authors do not claim that scientific consensual knowledge alone brought the climate change discourse to the forefront. In fact, other mediators, such as Al Gore, were necessary to make this claim authoritative.

[3] The "Excellence Initiative" aims at improving research conditions, promoting research between disciplines and scientific competition as well as international cooperation and thereby profiling Germany as science location (http://www.wissenschaftsrat.de/1/fields-of-activity/excellence-initiative/).

[4] Also, the "storyline" drew explicitly on the University's concept for the federal "Excellence Initiative". For an elaboration on the concepts of storyline see Hajer (2009).

Earlier efforts from (student) groups with similar interests were mainly centered around single issues, such as the use of recycling paper. Since these failed to structurally work toward the reduction of the university's "ecological footprint", SIGU decided at an early stage to target the university's directors and relevant local and regional politicians directly. The efforts to seed the sustainability process culminated in the organization of a two-day symposium. The momentum for change was caused by the production of "usable knowledge" for the transformation process (Haas, 2004),[5] and a successful discursive "self entrapment" (Risse-Kappen et al., 1999): a festive and public evening talk followed by a panel discussion with prominent disputants manifested the spin and raised the bar for the subsequent discussions within topical keynote lectures and workshops. This event finally set the stage for intended decisions that would have been impossible without the imprinted public interest. Shortly afterward, the university directors implemented the Eco-Management and Audit Scheme (EMAS). For SIGU, this success helped to grow confidence and acceptance of SIGU as a serious and trustworthy actor. SIGU consolidated this acceptance by participation at all stages of the EMAS validation process.[6]

The symposium also laid the foundations for changing the university's research and teaching program toward SD. In this respect SIGU followed two strategies:

On the one hand, SIGU arranged numerous ESD courses. In cooperation with the "Studium Professionale" (interdepartmental course program for key skills) SIGU created the "Studium Oecologicum". This program encompasses seminars concerned with questions of SD, covering theoretical foundations of SD as well as the practice of SD and its connection to scientific and socio-political discourses. Examples range from "understanding predictions on climate change", "sustainable city development" and "intercultural aspects of SD" to "Gender@Nature". The program has become well known and is, with roughly twenty courses offered each semester, an established and expanding part in the interdisciplinary teaching program. Furthermore, using innovative teaching methods and including young professionals and scientists as lecturers, the program also aims for performative and methodological conformity with ESD.

To further change teaching and research towards SD, SIGU organized a public lecture series on "Science for Sustainable Development" with various well-known scientists of different academic disciplines.[7] This series and a related book with topical essays (SIGU, 2012), address (i) the role of SD in the science-system and (ii) the relationship of single disciplines with SD – i.e. how SD influences research and how the specific discipline may contribute to realizing SD.

On the other hand, SIGU worked for the institutional inclusion of ESD. Therefore, SIGU rallied for the establishment of a university's advisory council for SD. The council consists of academic staff, members of the university administration and students and is chaired by one of the university directors. Established in late 2010, this council is commissioned to draft a comprehensive SD strategy for the university. The council provides recommendations to the university's directorate on SD-related issues, and promotes and coordinates teaching and research for SD. In 2011, e.g., a sustainability price for bachelor and master theses was awarded.

The intensive cooperation with the student unions has also been important for anchoring the initiative in already existing institutional structures. In particular, SIGU ensured a seat for a

---

[5] The outcomes of the symposium were documented in a book (SIGU, 2009) and have become a useful reference tool for SIGU, not least as a signal of commitment and seriousness toward e.g. the university's directors and funding bodies.

[6] Among other things, SIGU was coauthor of the university's environmental policy of the university and contributed ambitious goals for the EMAS process.

[7] The notion of "science" encompasses in German natural science, social science, and the humanities.

member of the student union in the university's working group for environmental management and five seats for students in the advisory council on SD. This representation of all actors of the university is essential for a growing legitimation of the sustainability process as a whole.

A general theme of these examples is the successful establishment of several communicative arenas driven by the engagement of SIGU. Within these arenas, partly also represented by new institutional structures, SIGU was able to put into practice many innovative ideas, ranging from new teaching and learning concepts to more sustainable institutional procedures.

2.2 Student initiatives as "boundary agents"

The authors have already touched upon the ways in which SIs play an important role in communicating and enacting a sustainability program. Along these lines the authors now reflect about SIs' capacity to assemble diverse transdisciplinary actor groups.[8] In general, students and SIs are not bound to hierarchies and overall fixed schedules. This flexibility allows SIs to translate, negotiate, mediate and simplify in order to work with students, university administration, academic staff and other local actors outside the academic boundaries. Scholars in science studies have termed such communicative efforts "boundary work" (Star and Griesemer, 1989). Let's consider three examples from the case study.

As one of SIGU's subgroups, the project "Bunte Wiese" ("colorful lawn") has dedicated itself to foster biodiversity in areas that have traditionally been shaped by monocultures such as public parks or green verges.[9] Since these public spaces are deployed and governed by a variety of actors, transformation requires a transdisciplinary approach. Students and administrative university staff work with experts from the city and regional parliament to develop and implement a blue print for public areas to increase biodiversity.

On the local and regional level, SIGU co-organizes an annual "sustainability day", a platform for various local initiatives, the university and local stakeholders to present themselves and to explain how their own work relates to SD.[10] A sustainability lecture by a prominent speaker ensures both the visibility of the "sustainability day" within the region, and the presence of high university officials. These 'dramaturgical considerations' proved important since the politics of science in a university are as much staged as in the classical public domain (Hilgartner, 2000) and Sustainability Science as an emerging crosscutting approach depends particularly on a carefully staging since it is not established as a legitimate discipline, yet (Clark, 2007).

Considering the federal level, SIGU is a co-founder of the "Netzwerk studentischer Nachhaltigkeitsinitiativen". This network of SIs working toward SD in Germany has published, e.g., a position paper with a detailed catalog of suggestions and demands for students, scientists, presidents of universities, and the federal government to create enabling conditions for the pathway toward a university landscape in SD.[11] Additional efforts of SIGU were talks at hearings, e.g. in a regional Laender parliament, and several topical conferences to share experiences and usable knowledge with other actors.

All three cases exemplify how SIGU in particular and SIs in general engage on the local, the

---

[8] In the understanding of the authors, transdisciplinarity includes actors who hold non-academic forms of knowledge, whereas interdisciplinary research stays within the boundaries of classical research institutions (Hadorn et al., 2008; Esguerra and Roosen-Runge, 2012).

[9] For more information see http://www.greening-the-university.de/index.php/bunte-wiese.

[10] For a broad coverage of the sustainability day including videos see http://www.uni-tuebingen.de/einrichtungen/internationales-zentrum-fuer-ethik-in-den-wissenschaften/forschung/natur-und-nachhaltigkeit/nachhaltigkeitstag-der-hochschulregion-tuebingen-hohenheim.html.

[11] The position paper is accessible both in German and English at: www.nachhaltige-hochschulen.de.

regional, and the federal level in creating distinct communicative arenas. Depending on the specific context, their role changes: they may appear as activists, work toward the local enactment of policies, or get diverse actors together and thereby act as boundary agents.

2.3 Student initiatives as learning spaces

The notion of learning is the final category to be examined as a distinct feature of communicative arenas created by SIs. While SIGU was still in emergence, the first meetings were productive communicative arenas focused on central questions: How have others defined a university in sustainable development? How does the initiative envision such a university? What might be an appropriate strategy? Who might fund projects the initiative would like to realize? In addressing these questions collectively, students learn about different approaches toward SD, and engage in discussions with people from various disciplinary backgrounds.

For being politically effective, SIs also need to gain knowledge about the organization of the university administration, about hierarchies and opportunities for intervention. SIs must develop adequate methods for participation in different contexts of communicative arenas, and learn to be sensitive to the attitudes and acting modes of other actors (Barth, 2007: 57). If successful, the participation in such an initiative creates a deep sense of self-empowerment of learners who realize that they can shape their own, sustainable future (Rieckmann and Stoltenberg, 2011: 125).[12]

While the above notion of learning is mostly concerned with a self-reflexive gaining of knowledge, the authors also want to stress a second form of learning: SIs promote communicative arenas in which participation of several actors enables a reflective and discursive re-definition of aims and meanings of SD. To consider two examples, the symposium organized by SIGU offered seven intense workshops in which various actors discussed core themes of a university in SD with a focus on Tübingen but also on more general aspects (SIGU, 2009). Second, in a recent transdisciplinary workshop in the "Studium Oecologicum", a former SIGU member, an environmental economist, and the University's sustainability manager brought together staff and students of universities from the region. The aim of the workshop was, first, to enable participants to develop solutions to reduce environmental impacts of universities. Second, visions of a university in SD were collectively developed, including recommendations for the next sustainability program of the University of Tübingen, and drawing on experiences of university staff and fresh ideas from the student body.

Both cases – the symposium and the workshop – exemplify at least two further notions of learning. The understanding of SD is not given *a priori* but evolves with people's con- and perceptions. Hence, self-empowerment to and awareness for participation is generally important to enable *social learning processes.* In this sense, SIs open learning spaces for the entire university in which methods as well as aims and meanings of SD enter a participatory discourse. On this basis, SIs can be regarded as an end in itself based on a discursive understanding of SD (Martello and Jasanoff, 2004). In addition, both cases show how these communicative arenas foster *institutional learning* (P. M. Haas and E. B. Haas, 1995). A university in SD is a learning institution facing a twofold challenge: the content of SD has to be incorporated into the university's curriculum and the organizational procedures, which is unavoidably interwoven with the establishment of suitable means to achieve the goal of a participatory and discursive understanding of SD. In other words, open communicative arenas as promoted by SIs performatively construct learning institutions in SD.

---

[12] In German, this ability is called Gestaltungskompetenz (de Haan and Harenberg, 1999) often translated as 'shaping competence' (e.g. de Haan, 2006).

3. The role of student initiatives in context

Based on the theory-driven discussion of successful SI's achievements, the preceding chapter elaborated on the importance of SIs for the transformation of universities via creating *communicative arenas*. This section discusses how SIs' potential to catalyze institutional change can be supported and put on a lasting basis.

As it is SIGU's main idea to initiate a process that leads to a SD transformation of the University of Tübingen, two preliminary considerations have to be born in mind. First, the process itself is intended to result in enduring formal and informal institutions allowing for participation of all university members in order to reach a university in SD. Second, although SIs can achieve much, they are no cure-alls. It is neither the basic principle of a SD transformation process that it should be maintained by SIs alone instead of a broad supportive movement from all university groups, nor is it feasible for a SI.

3.1 Limits

There are a range of challenges and obstacles that limit SIs' ability to initiate and uphold a structural transformation process themselves. Foremost, SIs have to come into being in the first place. Like-minded students have to meet, formulate objectives of their shared commitment and agree on a strategy to foster institutional change.

Already at this stage of internal agenda setting, the two major challenges of student engagement become apparent: first, activists desire not only to seed projects, but also to experience an outcome within their period of engagement. Second, several projects require knowledge and expertise on general concepts and specific contexts before understanding and being able to contribute to the addressed issue. Consequently, activist short-term projects might be easier to agree on than long-term strategical engagement – at least at a first glance.

Even after a SI's formation, a crucial challenge lies in the constantly changing membership structure due to short curricula, studying abroad and exam periods. If the initiative's agenda and strategies cannot be communicated to new members, latter might feel constricted in their activities by projects started by previous members. Work-intensive projects with tight schedules need the attention and coordination of more members in order to bridge vacation and exam periods. Finally, participation in more than one – possibly long-term – project demands a rather professionalized working structure with both internal management and project tasks that are time-consuming.

The above-referred challenges not only render the internal discourse complicate. Student commitment is voluntary, unpaid and subject to severe time and expertise constraints, while other professionals in administration and public are established and educated in their specific fields-of-activity. Students lack experiences in administration and law, and have to learn most of the necessary knowledge from scratch to allow for a constructive participation in decision-making processes. Furthermore, members of SIs change frequently, while contact persons in university and public stay longer tenures, which complicates building up reliable communication, trust and reputation.

3.2 Strategies

As SIGU's example shows, it is possible to overcome many limitations. In order to engage in long-term processes, it is important to develop a clear vision of a university in SD, concrete short- and long-term aims and the strategic local knowledge to implement them.

Starting with the initiative's internal process, a regular, reflexive evaluation and re-definition of the aims is necessary to acknowledge success, prevent dead-ends of engagement and allow all members to agree on the initiative's agenda. In order to put engagement on a fruitful basis, internal management and project tasks should be fairly distributed and kept open as much as possible for everybody. Retreats may serve as fora for assessment, feedback, strategic

planning and team building. Documentation of objectives, strategic planning of programs and results as well as open access to information within the group are crucial as they reduce the challenge of a changing membership and facilitate participation.

For long-term strategic projects, one very basic rule of thumb may be of help: Do not act without a success-representing intermediate-term exit strategy. From the beginning, possible forms of future self-sustaining institutional settings have to be brought into discussion and projected. In particular, the gradual transformation of existing structures within collaborations has proved successful to implement the SIs' aims into enduring structures. Naturally, working with established structures, which stand in clear contrast to SIs' vision of a university in SD, is undoubtedly accompanied with compromises and may lead to opposition of fellow students who aim for more. For the viability of the SI, however, such transformative catalysis frees power to tackle further projects.

Practically speaking, focus events with prominent, convincing speakers help to get a project started and sometimes even financed. Having finished one starting project successfully grows the regard as a trustworthy and constructive SI, which in turn facilitate the interaction with other stakeholders. When known to partners, further doors open for thematic and strategic partners in new projects.

3.3 Enabling conditions

University officials and politicians can support SIs' potential to contribute innovative work. Apart from the very obvious precondition that they have to take seriously what students are able and willing to contribute to a university in SD, they can open experimental spaces that allow for the development of best practice examples and the nucleus of new institutions. Also, financial support and organizational backing could be effective, e.g. in the form of service centers and start-up financing grants for SIs. University presidents can also help by their own commitment to SD and by encouraging university members to engage in SD processes. Moreover, working in SIs for SD advances crucial ESD competencies such as participation, cooperation or motivation and enables perceived self-efficacy, self-organization and self-learning (de Haan and Meisch, 2012). Given tight schedules, it remains challenging for students to actually find the time for extra curricula activities. The authors thus strongly recommend less obligatory courses so that students have space to pursue innovative paths; in addition, universities must think about fostering and crediting this learning as part of the regular course program in order to do both: facilitate student engagement and promote a more comprehensive learning.

4. Conclusion

To advance the discussion on how the transformation of universities toward sustainable development may be achieved, this paper has focused on an often-overlooked actor category in the discourse on universities in SD: student initiatives.

Based on the example of the SI *Greening the University e.V. (*University of Tübingen, Germany*)*, and by drawing on theories of knowledge, discourse and communication, this paper has shown how SIs can catalyze institutional change toward a university in SD. The basic mechanism of this bottom-up initiated change is conceptualized by the creation of communicative arenas, i.e. spaces of informal or formal exchange centered around a specific topic in which a multitude of social actors may meet.

More specifically, the authors argue that SIs are able to play a vital role for a university in SD for three reasons:

(1) SIs invoke communicative arenas that address innovative ideas and give birth to *envisioned projects* and new concepts. Coupled with a long-term strategy, these efforts induce changes of the university's *institutional implementation* of SD.

(2) Not bound to hierarchies, SIs play the important role of '*boundary agents*' in communicating and enacting a SD program to the "outside world", i.e. actors in politics, society and economy.

(3) Finally, SIs not only provide *individual learning* spaces for the members, in which competencies enabling participation are acquired. More generally, SIs bring forward both *social and institutional learning* in the entire university allowing for a participatory and discursive institutional implementation of SD.

Despite these promises, it is neither desirable nor feasible for a SI to initiate and uphold a SD transformation on its own. SIs and their communicative environment have to be clear, reflective and open about the scope and the available means of a SI. Accepting the own limitations, fresh, innovative and passionate student engagement is able to flourish instead of being suppressed in hierarchical and inflexible structures due to lacking expertise and restricted time horizon of student engagement. The process of university-wide institutional change toward SD, thus, must be a participative process involving a broad supportive movement.

In summary, this paper has shown that SIs provide a unique potential for universities in their quest to realize a participatory understanding and implementation of SD. It is essential that strategies and actions by politicians and university leaders recognize and support SIs to foster innovative change from below that is indispensible for a transformation towards universities in SD. Students should feel encouraged to use their innate abilities to make change toward sustainable universities happen.

Bibliography

Barth, M. (2007), *Gestaltungskompetenz durch Neue Medien? Die Rolle des Lernens mit Neuen Medien in der Bildung für eine nachhaltige Entwicklung*, Berliner Wissenschafts-Verlag, Berlin.

Clark, W.C. (2007), "Sustainability science: a room of its own", *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 104 No. 6, 1737-8.

de Haan, G. and Harenberg, D. (1999), *Bildung für eine nachhaltige Entwicklung. Gutachten zum Program,* Materialien zur Bildungsplanung und zur Forschungsförderung, Vol. 72. Bonn: BLK. www.blk-bonn.de.

de Haan, G. (2006), "The BLK '21' programme in Germany: A 'Gestaltungskompetenz' based model for education for sustainable development", *Environmental Education Research*, Vol. 12 No. 1, pp. 19-32.

de Haan, G. and Meisch, S. (2012), "Bildung für nachhaltige Entwicklung. Bildung für eine zukunftsfähige Volluniversität." in: StudierendenInitiative Greening the University e.V. (Eds), *Wissenschaft für nachhaltige Entwicklung! Multiperspektivische Beiträge zu einer verantwortungsbewussten Wissenschaft*, Metropolis-Verlag, Marburg, pp. 47 - 70.

Esguerra, A. (2006), "Mit „High Tech und Hegel" in eine nachhaltige Zukunft. Eine Nachhaltigkeitsstrategie für die Universität Tübingen." http://fu-berlin.academia.edu/AlejandroEsguerra/Papers.

Esguerra, A. and Roosen-Runge, F. (2012), "Nachhaltigkeitswissenschaft - die undisziplinierte Disziplin. Transdisziplinäre Herausforderungen nachhaltiger Entwicklung", in

StudierendenInitiative Greening the University e.V. (Eds), *Wissenschaft für nachhaltige Entwicklung! Multiperspektivische Beiträge zu einer verantwortungsbewussten Wissenschaft*, Metropolis, Marburg, pp. 135 - 155.

Haas, P.M. (1992), "Introduction: Epistemic Communities and International Policy Coordination", *International Organization*, Vol. 46 No. 1, pp. 1-35.

——— (2004), "When does power listen to truth? A constructivist approach to the policy process", *Journal of European Public Policy*, Vol. 11 No. 4, pp. 569-592.

Haas, P.M., and Haas, E.B. (1995), "Learning to learn: improving international governance." *Global governance*, Vol. 13, pp. 255-284.

Hadorn, G. H., Biber-Klemm, S., Grossenbacher-Mansuy, W., Hoffmann-Riem, H., Joye, D., Pohl, C., Wiesmann, U., and Zemp, E. (2008), "The emergence of transdisciplinarity as a form of research", in Hadorn, G. H., Hoffmann-Riem, H., Biber-Klemm, S., Grossenbacher-Mansuy, W., Joye, D., Pohl, C., Wiesmann, U. and Zemp, E. (Eds): *Handbook of transdisciplinary research*, Springer-Verlag, London, pp. 19-39.

Hajer, M.A. (1995), *The politics of environmental discourse: ecological modernization and the policy process*, Oxford University Press, New York.

Hajer, M.A. (2009), *Authoritative Governance: Policy-making in the Age of Mediatization*. Oxford University Press, New York.

Hajer, M.A., and Versteeg, W. (2005), "A decade of discourse analysis of environmental politics: achievements, challenges, perspectives", *Journal of Environmental Policy & Planning*, Vol. 7 No. 3, pp. 175–184.

Helferty, A. and Clarke, A. (2009), "Student-led campus climate change initiatives in Canada", *International Journal of Sustainability in Higher Education*, Vol. 10 No. 3, pp. 287-300.

Hilgartner, S. (2000), *Science on stage: expert advice as public drama*, Stanford University Press, Stanford.

Johnstone, I. (2005), "The power of interpretive communities", in Barnett, M. and Duvall, R. (Eds): *Power in global governance*, Cambridge University Press, Cambridge, UK, pp. 185-248.

Knoblauch, H. (2001), "Communication, Context and Culture. A communicative constructivist approach to intercultural communication", in *Di Luzio, A., Günthner, S. and Orletti, F. (Eds): Culture in communication: analyses of intercultural situations*, J. Benjamins, Amsterdam, pp. 3-33.

Krizek, K.J., Newport, D. White, J. and Townsend, A.R. (2012) "Higher education's sustainability imperative: how to practically respond?", *International Journal of Sustainability in Higher Education*, Vol. 13 No. 1, pp. 19 - 33.

Leal Filho, W. (2011), "About the Role of Universities and Their Contribution to Sustainable Development", *Higher Education Policy*, Vol. 24, pp. 427-438.

Lozano, R. (2006), "Incorporation and institutionalization of SD into universities: breaking through barriers to change", *Journal of Cleaner Production*, Vol. 14 Nos. 9-11, pp. 787-796.

Martello, M.L. and Jasanoff, S. (2004), "Introduction Globalization and Environmental

Governance", in Jasanoff, S. and Martello, M.L. (Eds), *Earthly Politics. Local and Global in environmental Governance,* MIT Press, Cambridge, USA, pp. 1-29.

Newport, D., Chesnes, T. and Lindner, A. (2003), "The "environmental sustainability" problem: Ensuring that sustainability stands on three legs", *International Journal of Sustainability in Higher Education,* Vol. 4 No. 4, pp. 357-363.

Rieckmann, M. and Stoltenberg, U. (2011), "Partizipation als zentrales Element von Bildung für eine nachhaltige Entwicklung", in Heinrichs, H., Kuhn, K. and Newig, J. (Eds): *Nachhaltige Gesellschaft. Welche Rolle für Partizipation und Kooperation?* VS Verlag für Sozialwissenschaften, Wiesbaden, pp. 117-131.

Risse-Kappen, T., Ropp, S.C. and Sikkink, K. (1999), *The power of human rights: international norms and domestic change.* Cambridge University Press , Cambridge, UK.

Roosen-Runge, F., Drupp, M.A., Keul, L. and Esguerra, A. (2012), "Bottom-Up Engagement für Nachhaltige Entwicklung – Erfahrungen, Chancen und Grenzen", in StudierendenInitiative Greening the University e.V. (Eds), *Wissenschaft für nachhaltige Entwicklung! Multiperspektivische Beiträge zu einer verantwortungsbewussten Wissenschaft*, Metropolis, Marburg, pp. 91-118.

Schmidt, V. (2012), "Discursive Institutionalism: Scope, Dynamics, and philosophical Underderpinnings.", in *Fischer, F. and Gottweis, H. (Eds): The argumentative turn revisited: public policy as communicative practice*, Duke University Press, Durham.

Schneidewind, U. (2009), *Nachhaltige Wissenschaft: Plädoyer für einen Klimawandel im deutschen Wissenschafts- und Hochschulsystem*, Metropolis, Marburg.

Sharp, L. (2002), "Green campuses: the road from little victories to systemic transformation", *International Journal of Sustainability in Higher Education*, Vol. 3 No. 2, pp. 128-45.

StudierendenInitiative Greening the University e.V. (Eds.) (2009) [SIGU, 2009], *Greening the University – Perspektiven für eine nachhaltige Hochschule*. oekom, Munich.

StudierendenInitiative Greening the University e.V. (Eds.) (2012) [SIGU, 2012], *Wissenschaft für Nachhaltige Entwicklung! Multiperspektivische Beiträge zu einer verantwortungsbewussten Wissenschaft*, Metropolis, Marburg.

Star, S.L. and Griesemer, J.R. (1989), "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39", *Social Studies of Science*, Vol. 19 No. 3, pp. 387-420.

Wackernagel, M. and Rees, W.E. (1996), *Our Ecological Footprint: Reducing Human Impact on the Earth.* New Society Publishers, Gabriola Island, British Columbia, Canada.

About the authors

Moritz A. Drupp studied economics, with special focus on sustainability economics, at the Universities of Tübingen and Hagen (both Germany) as well as Tufts University (USA). He was a member of the advisory council for sustainable development of the University of Tübingen and has co-led the student initiative Greening the University, e.V.

Alejandro Esguerra is a PhD candidate at the Free University Berlin. Most recently he visited the Department of Science & Technology Studies, at Cornell University to deepen his research on the production of knowledge in transnational, hybrid arenas. In Amherst (USA) and Tübingen, he studied International Relations and Philosophy (M.A.), and in 2006 co-initiated the student initiative Greening the University, e.V.

Lena Keul studied International Economics at the Universities of Tübingen (Germany) and Recife (Brasil). After her studies, she worked on projects relating to sustainability, Education for Sustainable Development and climate change at the University of Nürtingen-Geislingen as well as the City of Cologne. Since February 2011, she works in the sustainability research domain of Ökoworld LUX S.A. In Tübingen, she has co-initiated the student initiative Greening the University, e.V.

David Löw Beer is a PhD candidate at the Leuphana University Lüneburg in the field of economic education for sustainable development. He has studied economics and politics at the Universities of Tübingen and Niterói, Brasil. Further, he worked for two years in a comprehensive school as a fellow of Teach First Deutschland. In Tübingen, he led the student initiative Greening the University, e.V. from 2008 to 2009.

Simon Meisch studied political science and German literature at the Universities of Tübingen and Edinburgh. He is a researcher at the International centre for ethics in the sciences and humanities and a lecturer at the University of Tübingen, working on issues of Education for Sustainable Development, ethics and historical institutionalism, and has led the student initiative Greening the University, e.V.

Felix Roosen-Runge studied physics, mathematics and philosophy at the University of Tübingen, Germany, and the ETH Zürich, Switzerland. At present, he is PhD-candidate in biophysics in Tübingen. In Tübingen, he contributed to the development of a SD curriculum as well conceptually as also practically as lecturer of seminars.