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**PARTICIPATORY APPROACHES
IN HIGHER EDUCATION'S SUSTAINABILITY PRACTICES:
A MIXED-METHODS STUDY
LEADING TO A PROPOSAL OF A NEW ASSESSMENT MODEL**

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Abstract

Universities have been attributed a key role in contributing to a paradigm change towards sustainability, and an increasing number of higher education institutions (HEIs) have started to respond with diverse strategies for sustainability implementation and institutional transformation. The concept of participation - one requirement for sustainability and part of the Education for Sustainable Development (ESD) discourse - represents an underexplored research field at university level, and a more differentiated understanding of these processes is still missing, both in the practice of conducting a participatory process and in the sustainability assessment. This study analyses how HEIs engage their communities in sustainability related efforts and how these efforts are assessed. In response to the need for more holistic approaches, an assessment model, INDICARE, is proposed that can assist in designing and assessing participatory processes within higher education's sustainability initiatives. Following a mixed-methods research design, literature reviews and desktop research about sustainability assessment in universities were first used to prepare semi-structured interviews and focus groups with sustainability practitioners (n=51) in order to identify critical success factors and possible assessment criteria for participatory approaches. The analysis was conducted according to qualitative content analysis and supported with qualitative data analysis software NVivo 10. The findings were then used in combination with six feedback loops (diverse sample (n=98)), data triangulation and critical reflection to develop the assessment model. The model is based on indicators and practices, divided into three categories of context, process and transformation. This study shows that participatory processes can be better assessed from a social- and organisational learning perspective, proposing an empowerment-oriented assessment that would link the individual and collective growth with transformation. Perceiving universities as living laboratories, these institutions can provide excellent opportunities for engaging the whole community (internal and external) meaningfully in sustainability. By providing an innovative assessment tool, the study invites HEIs to engage in a broader discourse about the human-nature relationships and the interconnectedness of societal- and ecosystems, exploring ecocentric and biophilic ideas together with transformative learning theories. This study can initiate further research on transformative processes, exploring new collaborative methods that foster trans- and interdisciplinarity and that focus on science-society interfaces, embedding the research in the service of socio-ecological systems.

Keywords: *Higher Education, participation, sustainability assessment, model, indicators, integrative approaches*

Resumo alargado

Transformar as Instituições do Ensino Superior (IES) pode ser visto como um dos grandes desafios na transição para um futuro mais sustentável. A estas instituições tem sido atribuído um papel importante na mudança de paradigma no sentido de permitir que as gerações atuais e futuras possam viver de modo saudável e em harmonia com os ecossistemas. Este papel assume múltiplas funções e desafios. As IES são desafiadas a repensarem a sua missão institucional, as suas estruturas e o funcionamento dos seus cursos, como por exemplo a necessidade dos conteúdos se abrirem para a inter- e transdisciplinaridade, mas também a repensarem a sua missão e finalidade educativa. Na perspetiva dos estudantes enquanto futuros líderes e decisores, estes devem estar habilitados com as competências necessárias para serem capazes de enfrentar os complexos desafios com que as sociedades de hoje estão confrontadas. Assim, as IES devem ser convidadas a reformularem os seus currículos para a literacia da sustentabilidade. Os esforços relacionados com a Educação para a Sustentabilidade (ES) / Educação para o Desenvolvimento Sustentável (EDS) são a prova de um movimento crescente de investigadores e atuação dedicadas à investigação, à ação e ao debate e prática sobre como envolver as IES nessas mudanças institucionais e educacionais.

Um número crescente de IES já começaram a responder com estratégias diversas para a implementação da sustentabilidade e transformação institucional. O conceito de participação tem sido considerado útil neste contexto enquanto contributo e reforço da governação institucional e para o discurso da EDS na promoção de uma cidadania democrática. As abordagens participativas têm ganho crescente atenção nestes esforços, mas permanecem muitas vezes vagas e não sendo consideradas nos procedimentos de avaliação da sustentabilidade. Existe uma escassez de estudos sobre as dimensões da participação no âmbito da implementação da sustentabilidade no ensino superior, e uma incompreensão desses processos, tanto na prática da realização de um processo participativo, bem como na avaliação da sustentabilidade.

Para a implementação da sustentabilidade as abordagens participativas podem e devem ser vistas como cruciais na mudança de paradigma para a sustentabilidade e contribuir para a integração do conceito de sustentabilidade na cultura universitária. Mesmo que a participação seja, em parte, considerada nas práticas de avaliação existentes, ainda não está claro o que medir, e como medir os processos participativos. Abordagens holísticas são muitas vezes anunciadas, mas os métodos de avaliação reducionistas são os mais frequentemente seguidos. O foco parece estar colocado no desempenho e *benchmarking*, levantando preocupações de que as práticas de avaliação da sustentabilidade possam atender mais às necessidades de mercado do que às necessidades da sociedade e da sua transformação. Apesar de em alguns casos de aplicação, apenas um número reduzido de instituições seguir uma abordagem integradora da sustentabilidade na sua organização, a designada '*whole-institution approach*'. Há tendências unilaterais de alguma forma enganadoras de "tornar-se verde" (*greenwashing*), impulsionado por necessidades do mercado, pelas vantagens de *marketing*, e pelos benefícios económicos, aumentando contudo os riscos do designado *greenwashing*.

Partindo deste estado atual dos conhecimentos, foram delineados três objetivos principais de investigação:

- (i) Estudar os conceitos de ES/EDS, da ciência da sustentabilidade e da avaliação da sustentabilidade, com foco em abordagens participativas dentro de iniciativas de sustentabilidade em instituições de ensino superior;
- (ii) Identificar os fatores críticos de sucesso e possíveis critérios de avaliação para abordagens participativas na implementação da sustentabilidade do ensino superior;
- (iii) desenvolver um modelo conceptual de suporte à avaliação da qualidade de um processo participativo em termos de eficácia e potencial de transformação da comunidade académica, em iniciativas para a sustentabilidade.

Para responder a estes objectivos, foi analisado como as IES envolvem as suas comunidades nas iniciativas de educação para a sustentabilidade e como essas

iniciativas são avaliadas. Em resposta à necessidade de abordagens mais holísticas, propõe-se um novo modelo de avaliação, o modelo INDICARE.

O estudo segue um desenho de investigação com métodos mistos utilizando entrevistas semi-estruturadas, grupos focais, *workshops* e apontamentos sobre observações de campo como levantamentos qualitativos; e questionários como método quantitativo, bem como contínuas revisões de literatura e triangulação de dados. A pesquisa foi desenvolvida em fases de investigação sequenciais, inspirada no método Delphi.

Como primeiro passo, foi realizada uma revisão da literatura e reflexão crítica sobre a ciência para a sustentabilidade e a educação para o desenvolvimento sustentável, como teorias de base e campos emergentes de investigação para uma transição a universidades (mais) sustentáveis. A seguir, realizou-se uma sistematização das ferramentas de avaliação de sustentabilidade aplicadas nas IES, para analisar em que medida a participação da comunidade no *campus* é efetuada. Esta análise foi utilizada para preparar entrevistas semi-estruturadas e grupos focais com profissionais da área da sustentabilidade (n = 51), a trabalharem no ensino superior, de 22 países diferentes, a fim de identificar os fatores críticos de sucesso e possíveis critérios de avaliação para abordagens participativas. A análise foi realizada de acordo com a análise qualitativa de conteúdo e suportada num *software* de análise de dados qualitativos, o NVivo 10. Os resultados foram então utilizados para desenvolver o modelo de avaliação, que foi discutido e ajustado ao longo de seis fases de *feedback*, tendo sido apresentada a professores, investigadores, profissionais comunitários e estudantes de doutoramento (n = 98) durante conferências, *workshops* e encontros universitários, em cinco países diferentes.

Os resultados das entrevistas e grupos focais sugerem que o sucesso das abordagens participativas é dependente das condições estruturais das instituições e dos indivíduos envolvidas, destacando a importância de aptidões específicas e competências para os processos participativos. A EDS no ensino superior está associada à capacitação e “empoderamento” (*empowerment*), e tem evoluído de uma abordagem mais restrita da sustentabilidade ambiental para aspetos da

sustentabilidade social. Além disso, os participantes desta investigação deram evidências empíricas relacionadas, por um lado com algumas das dificuldades associadas ao envolvimento dos atores-*chave*, destacando por exemplo, a falta de recursos, a reduzida credibilidade e a frustração. Por outro lado realçaram aspetos positivos, como o aumento da aceitação, a confiança, o maior diálogo e o otimismo. No que diz respeito a possíveis critérios de avaliação, os resultados mostram que os processos participativos podem ser melhor avaliados a partir de uma perspectiva de aprendizagem social e aprendizagem organizacional enfatizando critérios não-lineares para a qualidade do processo em termos de profundidade e significado, bem como critérios em termos de produção de conhecimento e inovação. As respostas apontaram também embora implicitamente para a necessidade de considerar a aprendizagem transformadora no âmbito do *double and triple - loop learning*, se for de facto incorporada uma cultura de participação para a sustentabilidade, e sublinham o impacto forte na governação institucional.

Com base nesses resultados, e inspirados na teoria de sistemas, bem como nos princípios da biofilia e das abordagens ecocêntricas, o modelo de avaliação INDICARE aqui proposto centra-se na avaliação da qualidade e no carácter transformador do processo participativo. O modelo fornece um conjunto preliminar de trinta e dois indicadores e práticas, agrupados em três categorias de i) contexto, ii) processo e iii) transformação. Estas categorias seguem uma perspectiva integradora, reconhecendo as interligações e conexões entre o *contexto* no qual o processo participativo acontece, o desenho do *processo* e a sua execução, bem como as *transformações* que podem acontecer durante e a *posteriori* de uma iniciativa participativa. No seu conjunto visam capturar as características não-lineares de processos participativos. O processo de avaliação em si é considerado como um exercício estimulador e não como uma ferramenta de controlo, e enfatiza a ligação entre a reflexão pessoal e as atividades comunitárias. Os indicadores e práticas sugeridos neste modelo pretendem não só ajudar a avaliar a participação no processo de transição para uma universidade (mais) sustentável, mas também para contribuir positivamente para o debate em curso em torno da sustentabilidade no ensino superior, e para incentivar especialmente novas

perspectivas sobre as dimensões de participação. Para que processos participativos se tornem transformadores, o modelo INDICARE sugere a mudança da avaliação orientada para o desempenho no sentido de uma avaliação orientada para o “empoderamento” (*empowerment*) que ligue o crescimento individual ao coletivo.

De acordo com as conclusões deste estudo as IES devem refletir mais profundamente sobre o que pode significar a adoção de uma perspectiva sistémica no âmbito da implementação da sustentabilidade e na procura da contribuição para a justiça sócio-ecológica. É essencial abrir espaços para práticas mais transformadoras para lidar com a complexidade da sustentabilidade. Muitas vezes, ainda se notam percepções reducionistas, expressas em estruturas organizacionais fragmentadas, tornando a inter- e transdisciplinaridade mais difícil. A terminologia em torno de abordagens integradoras organizacionais (*whole-institution approach*) baseia-se em novas formas de colaboração, contrariamente às atuais estruturas hierárquicas e modelos de gestão mais tradicionais. Entendendo as universidades como laboratórios vivos, estas instituições podem proporcionar excelentes oportunidades para envolver toda a comunidade (interna e externa) num discurso significativo para a sustentabilidade e servindo de exemplo para outro tipo de organizações.

Este estudo pretende dinamizar o debate global sobre a sustentabilidade no ensino superior, nomeadamente propondo uma abordagem inovadora e mais holística na avaliação, que visa experienciar a interligação das relações homem-natureza, combinando com exercícios de reflexão, que possam assim responder melhor ao desafio para uma transformação ao nível individual e institucional, sem a qual os princípios da sustentabilidade serão dificilmente postos em prática. Esta investigação abre novos debates e conduzirá certamente a futuros estudos que serão necessário para melhor entender a implementação da sustentabilidade. Futuros estudos podem centrar-se, por exemplo, nos processos de aprendizagem transformadora e aproximações holísticas no seu impacte e potencial para o crescimento pessoal bem como para a transformação institucional, verificando também a eficácia deste tipo de processos. Mais investigação é necessária para entender as motivações nas quais se baseiam os esforços para a sustentabilidade, nomeadamente ao nível institucional,

para poder responder melhor aos desafios de transformação e servir o bem comum. Neste âmbito, podem explorar-se novos métodos de colaboração, como a Teoria U ou o *Dragon Dreaming*, para perceber a sua capacidade de adaptação ao contexto universitário e melhorar processos colaborativos. Em geral, tal investigação poderia incidir sobre as interfaces da ciência-sociedade e sobre o seu potencial para a mudança em direção a um paradigma mais sustentável, colocando a investigação ao serviço dos sistemas sócio-ecológicos.

Palavras-chave: *Ensino Superior, participação, avaliação da sustentabilidade, modelo, indicadores, abordagens integradas*

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List of abbreviations and acronyms

AASHE	Association for the Advancement of Sustainability in Higher Education
AISHE	Auditing Instrument for Sustainability in Higher Education
CSD	Commission for Sustainable Development
CSAF	Campus Sustainability Assessment Framework
DESD	Decade of Education for Sustainable Development
EMAS	Eco-Management and Audit Scheme
ESD	Education for Sustainable Development
EfS	Education for Sustainability
GASU	Graphical Assessment for Sustainability in Universities
GRI	Global Reporting Initiative
HE	Higher Education
HEI	Higher Education Institution
HESD	Higher Education for Sustainable Development
NGO	Non-Governmental Organisation
SA	Sustainability Assessment
SAT	Sustainability Assessment Tools
SD	Sustainable Development
STARS	Sustainability Tracking, Assessment and Rating System
STAUNCH	Sustainability Tool for Auditing University Curricula in Higher Education
UE4SD	University Educators for Sustainable Development
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCED	World Commission on Environment and Development

Preface

While in some countries, universities have started already many years ago to rethink their responsibilities towards society in the light of sustainability principles, in some others this topic is still in its infancy. Often, first spontaneous associations about this topic are linking sustainability in higher education (HE) to recycling and energy saving efforts. I personally could experience this very common reaction of people when I mentioned that my general PhD research topic was about sustainability in universities and the dimensions of participation: People frequently replied or asked “Ah, you mean whether people do waste separation and recycling, or switch off the lights?”. While of course recycling and resource efficiency are part of the broad topic spectrum related to sustainability, it is my wish to take the reader of this research on a far more reaching journey than behaviour change in a sense of ‘throwing litter in the right bin’.

The research has been motivated by my personal interest and curiosity in sustainability and the interfaces of society and environment: How can I engage in a meaningful way into the discussion about how to transform society that a dignified and harmonious life within in the planetary boundaries becomes possible for all living beings?

Schumacher (written 1974, published 1997) argues:

“The volume of education has increased and continues to increase, yet so do pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is to save us, it would have to be education of a different kind: an education that takes us into the depth of things”(Schumacher, 1997).

This research led me to ask these deeper questions. Looking back, decisive cornerstones for this study were two residential courses I joined at the Schumacher College, UK, (in November 2013 and June 2014) and which offered me the possibility to enlarge the spectrum of knowing: First of all, because any education offered at the

Schumacher Colleges addresses beautifully ‘head, heart and hands’ (Schumacher College, 2015); and secondly, because knowledge is not only transmitted intellectually, but includes body and all senses. Great space is given for connecting to nature and asking deeper questions about ourselves and how we want relate to the world.

Balancing intellectual input with other forms of knowing, the research process itself turned out to become a truly transformative experience. In particular, reflections on systems theory and sensing the interconnectedness of systems, introduced me to ‘a new way of seeing’ (Bateson, 1972) and to perceive more clearly the interdependencies of all elements in a system. Connecting to nature expanded my inner awareness about myself and about being part of a larger whole. Reorienting my attention towards the Earth felt like connecting to the source and the main purpose of all sustainability efforts: Preserving this beautiful planet and all forms of life. Eventually, this process relates to what Naess describes as the ecological self (Naess, 2008), referred to in more detail in IV.2.2, p.135, in this study.

With this thesis, it is my humble wish to add further perspectives on how sustainability implementation can be advanced in higher education and how participation can be approached from different angles.

General Introduction

“Enhancing participation requires society to find ways of educating people to participate and to develop ways of reaching agreement on what constitutes the common good.”

(Baker, 2006, p. 44)

“A sustainable university is a university that contributes to the quality of life and the well-being of the planet through its education, research, management and community outreach. Doing so requires continuous critical scrutiny of its own assumptions, values and practices. Since ‘quality of life’ and ‘well-being of the Planet’ are contested and dynamic concepts a sustainable university has a fundamental role to play in recalibrating their meaning as the world changes and new knowledge and insights emerge. Despite progress in recent years, this ideal remains a core challenge for most universities.”

(Wals in Sterling et al., 2013, p. 26)

i. Overview

This general introduction aims to introduce the overall research topic and the organisation of this doctoral thesis. The introduction is divided into four subsections: First, the research problem is identified, justifying as well the relevance of the research. Next, the research questions and objectives are pointed out, followed by the explanation of the methodological approach and the research design chosen. In the fourth subsection, the structure of the thesis is presented and finalised with some general remarks.

i.1 Identification of the problem and relevance of the research

Sustainability in higher education is an emerging and growing research field, in which publications have increased tremendously (Karatzoglou, 2013). The common approach to contextualize this type of research is to start explaining the role of universities and their societal mission to serve society, in particular regarding the complex societal, environmental and economic challenges intensified since the industrial revolution (climate change, social injustice, loss of biodiversity, resources scarcity, overpopulation just to name a few (Altbach *et al.*, 2009; Brown, 2011)). Universities are attributed an important role in accelerating a paradigm change that

would allow current and future generations to live well and in harmony with the ecosystems of a finite planet. This role is multifaceted: higher education institutions (HEIs) are challenged to rethink their institutional mission, their structures and functioning, e.g. overcoming divisions of academic disciplines toward opening up to inter- and transdisciplinarity, but also to rethink their educational mission and the overall purpose of education. Seeing students as the future leaders and decision-makers, universities are requested to reformulate their curricula toward sustainability literacy in order that students can be empowered and equipped with the necessary skills to be able to face the complex challenges societies today are confronted with (Barth, 2015; Lidgren *et al.*, 2006). The efforts related to Education for Sustainability (EfS) / Education for Sustainable Development (ESD) are evidence of a growing movement of scholars and practitioners dedicated to bring further the debate about how to engage in these institutional and educational changes (Leal Filho, 2010; Lozano *et al.*, 2014; Wals *et al.*, 2012). Transforming higher education can be seen as one of the big tasks on the transition to a more sustainable future. Research that can contribute to this transformation is therefore of utmost importance. The process toward more sustainable universities can only be undertaken collectively, and for this reason the concept of participation plays a crucial role. Even though participation has become one of the key terms in relation to sustainability and EfS/ESD (Læssøe, 2010), it has also become a buzzword with controversial meaning (Cooke *et al.*, 2001). There is a paucity of studies about the dimensions of participation within sustainability implementation in higher education, as a previous research suggested (Disterheft *et al.*, 2012b). In this previous study, top-down versus participatory approaches within environmental management systems in the university context were examined (*ibid.*), and a broad range of different understandings about participation could be noticed. At the same time, a lack of consideration of participatory dimensions in sustainability assessment (SA) became evident. Therefore, in this doctoral thesis, it was intended to explore more deeply questions related to engagement of the academic community in sustainability implementation and how participation can be assessed. Monitoring and assessment have become part of the sustainability debate in higher education, and several specific tools and indicators have been developed for universities to

assess their sustainability performance, for example the *Graphical Assessment of Sustainability in Universities (GASU)* (Lozano, 2006b), the *Audit Instrument for Sustainability in Higher Education (AISHE)* (Roorda, 2001) and the *Sustainability Report Card* (Sustainable Endowments Institute, 2011), which meanwhile does not exist anymore and was merged into the Sustainability Tracking, Assessment & Rating System™ (STARS) (AASHE, 2015; Urbanski *et al.*, 2015). Furthermore, a still small but increasing number of HEIs use Sustainability Reports, of which some follow the Global Reporting Initiative Guidelines (GRI) (Ceulemans *et al.*, 2014, 2015; Lozano, 2011). However, the participatory processes itself are less considered, and a specific assessment tool for participatory approaches within sustainability implementation is still lacking (Disterheft *et al.*, 2012a). The existing scientific literature about participatory processes and related indicators report mainly about experiences in fields like environmental policy-making, community-initiatives, e.g. related to Local Agenda 21 (e.g. Feichtinger *et al.*, 2005), citizen engagement (Gaventa *et al.*, 2010) or urban development (Turcu, 2013). Within the university context this investigation field is still underexplored. There have been calls for more holistic approaches and studies on how to facilitate transformative change (McEwen *et al.*, 2010) and how to enable a participative culture of SD in higher education (Vettori *et al.*, 2014). This research is encouraged by these calls and motivated by the wish to fill in the gap for an assessment procedure that follows a holistic understanding of sustainability implementation, putting emphasis on the transformative potentials of participatory approaches.

i.2 Research questions and objectives

Based on the research lacuna identified above, this research is guided by four main research questions:

- a) *How do universities engage their students, teaching and non-teaching staff in initiatives for sustainability implementation?*
- b) *How are these initiatives assessed?*
- c) *Having noticed a vague consideration of participation in sustainability assessment and reporting, how can the dimensions of participation be*

addressed more explicitly and integrated in sustainability assessment in higher education?

d) How can answers to these questions feed into the transition process towards a more sustainable university?

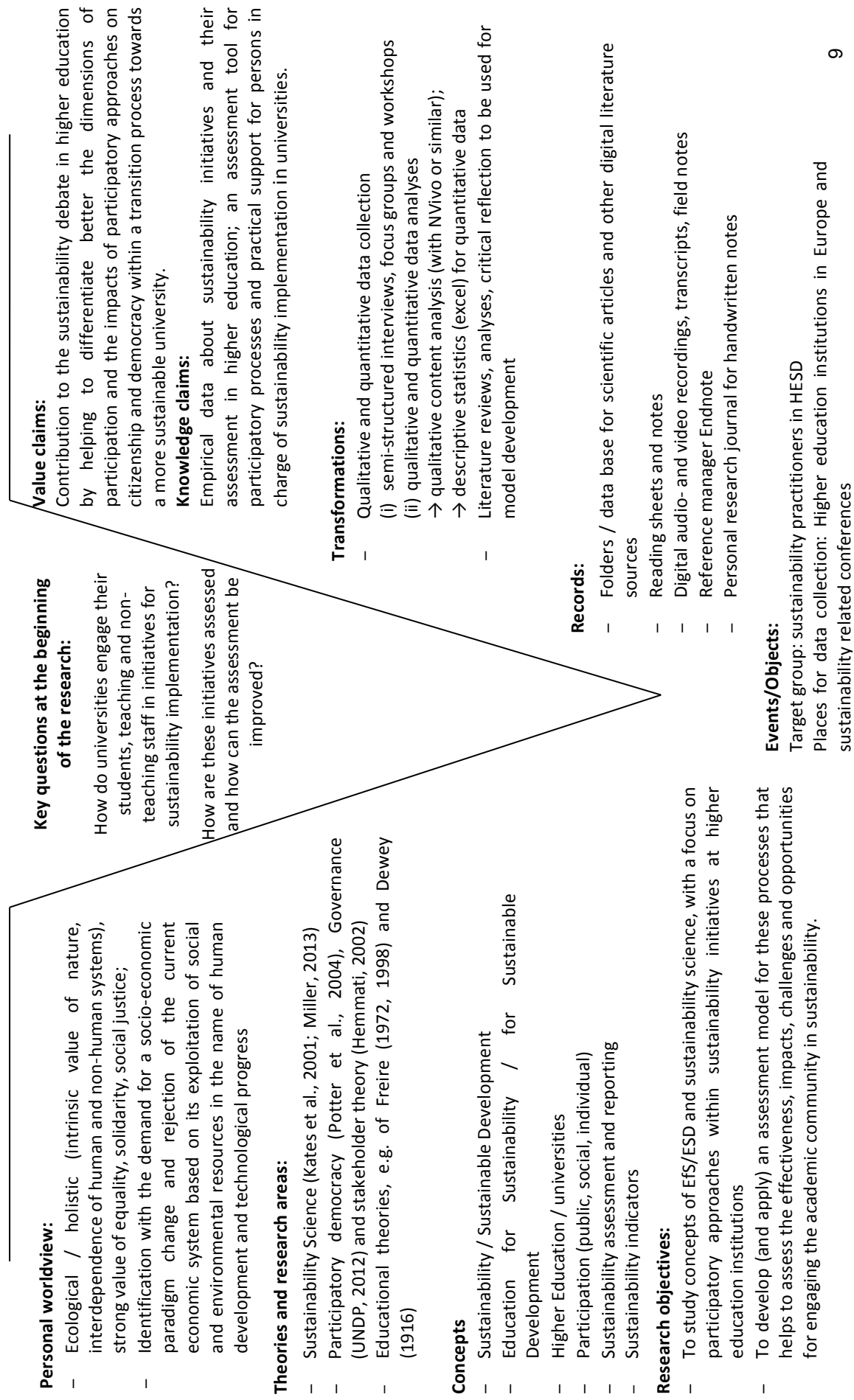
Deriving from these questions, three main research objectives were set up:

- (i) To study the concepts of EfS/ESD, sustainability science and sustainability assessment (SA), with a focus on participatory approaches within sustainability initiatives at higher education institutions;
- (ii) To identify critical success factors and possible assessment criteria for participatory approaches in higher education's sustainability implementation;
- (iii) To develop an assessment model that can help to assess the quality of a participatory process in terms of effectiveness and transformational potential when engaging the academic community in sustainability.

i.3 Methodological approach and research design

In a first step, a V-Diagram according to Gowin *et al.* (2005) (Figure i.1) was elaborated in order to reflect more systematically on personal assumptions, as well as on theories and concepts related to the research questions, and the values and knowledge claims that were intended to achieve with this study. V-Diagrams are considered as useful to understand better the complexity of a research task and help to structure knowledge (Gowin *et al.*, 2005). Figure i.1 shows that sustainability science, participatory democracy and educational theories according to Freire (1972, 1998) and Dewey (1916) form the initial theoretical frame for this study, focusing in particular on the concepts of sustainability / SD (Baker, 2006), EfS/ESD in higher education (Fadeeva *et al.*, 2010; Lozano *et al.*, 2013a; Vare *et al.*, 2007), participation (Cornwall, 2008) and sustainability assessment (Bond *et al.*, 2011; Shriberg, 2002; Singh *et al.*, 2009).

Figure i.1: V-Diagram for the PhD research approach



The theoretical context was enlarged at a later stage on learning theories (Argyris *et al.*, 1978, 1996; Mezirow, 1997, 2000) as an outcome from findings along the research process. The research should contribute to the sustainability debate in HE and help to differentiate better the dimensions of participation and the impacts of participatory approaches on personal and institutional transformation, including aspects related to citizenship and democracy within a transition process towards a more sustainable university. Empirical data about sustainability initiatives and their assessment as well as a proposal for a new tool constitute the knowledge claims. The objects to study are sustainability implementation in higher education settings, informed by experience reports of sustainability practitioners working in the university context.

Since the nature of the research problem was open to evolve along the research process, it was opted for an exploratory and inductive-oriented approach, taking an interpretive standpoint (Saunders *et al.*, 2009). In interpretivism, reality is seen as a social construct (Becker, 1970), in which multiple interpretations of events and situations can co-exist (Cohen *et al.* 2007). Such a standpoint and can therefore be seen as most adequate for the exploratory character of the study. By being interested in experiences of various stakeholder groups with participation and sustainability assessment in their universities, the related research questions aim to help understand the subjective reality of the participants involved and, consequently, a subjectivist's view (Saunders *et al.*, 2009) is considered appropriate. A mixed-methods research design (Bryman, 2012; Tashakkori *et al.*, 1998) appeared to be most suitable in order to conjugate the qualitative and quantitative aspects of the research objectives and make best use of data triangulation (Bryman, 2012, p. 392). Therefore, the following **methodical approach** was developed:

- To use **semi-structured interviews** and **focus groups** as an inductive approach for obtaining rich and varied data (Bryman, 2012) in response to research questions (i)-(iii). As the research does not start from a concrete hypothesis, these qualitative methods allow to find bottom-up information (Carmo *et al.*, 2008). The data analysis was conducted with qualitative content analysis

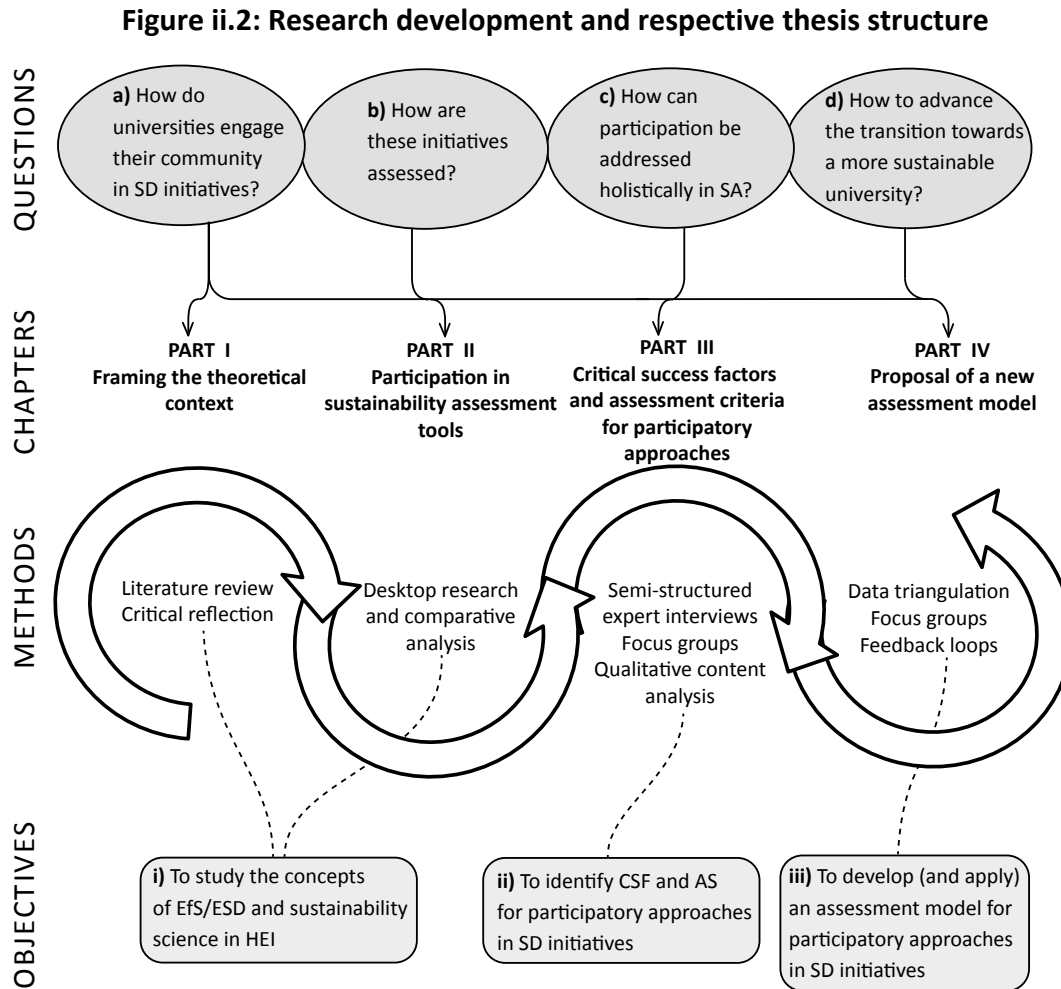
according to Mayring (Mayring, 2000, 2010), assisted with qualitative data analysis software NVivo 10;

- To follow inspirations from the **Delphi method** (Linstone *et al.*, 2002) and collect data in consecutive and iterative stages in order to crystalize items and aspects arising in the different research phases;
- To use **questionnaire surveys** with potentially quantitative data where appropriate in order to complement qualitative responses (Bryman, 2012; Fowler, 2002).
- To combine data analyses with continuous literature reviews along all research phases for appropriate **triangulation** (Denzin, 1970) and contextualization of new aspects deriving from the data and personal reflections.
- To use iterative stages to develop a measurement tool that would incorporate findings from the precedent research steps, drawing on inspirations from action research (Reason *et al.*, 2008; Saunders *et al.*, 2009).

From an organisational point of view, it was decided to collect data in Portuguese and German universities as well as during sustainability related international conferences and meetings for the following reasons: (i) the different university settings in Portuguese and German universities as well as different levels of experiences with sustainability implementation could enrich the data by exploring diverse perspectives; (ii) the conference settings allowed to meet a large number of sustainability practitioners in HEIs at the same time, permitting to conduct several interviews in a relatively short time period and to organize focus groups with participants who otherwise would not have been able to gather. Furthermore, these settings seemed to be useful for the participants as they were less distracted from daily routines and working demands. Wicks *et al.* (2009) refer to the importance of opening communicative spaces in these types of inquiries, and eventually the settings provided by the conference environment had a positive impact on the group process with regard on inclusion, control and intimacy (*ibid.*).

i.4 Structure of the thesis

Due to the chosen research design, the research development was sequential. Figure ii.2 shows the questions and objectives of each research stage with the corresponding methods applied. The respective research phases are mirrored in the thesis' chapters, referred to as Part I-IV.



This thesis has a cumulative format and is based on five peer review scientific publications (one currently in press), resulting from the different research stages. The publications were organised in **four main parts**.

- **Part I** frames the **theoretical context** for this study and is based on the book chapter *“Sustainability Science and Education for Sustainable Development in*

Universities – a critical reflection”, published in *Sustainability practices in higher education institutions – Mapping Trends and Good Practice at Universities round the World (2013)* (pp. 3-27) by Springer UK, London. The chapter offers a literature review about sustainability science and ESD in higher education. It addresses broadly the first research question (question a), and follows the first research objective (see also Figure ii.2) to study EfS/ESD and sustainability science in HEIs. By dealing critically with questions related to trends of ‘going green’ as a response to market requirements and reductionist approaches of sustainability implementation in universities, this chapter forms the fundament for the further search for more holistic perspectives in sustainability implementation.

- **Part II** deals with **participation in sustainability assessment** and is based on the book chapter *“Implementing sustainability at the campus - Towards a better understanding of participation processes within sustainability initiative”*, published in *Sustainable Development at Universities: New Horizons (2012)* (Ch. 29, pp. 345-361) by Peter Lang Scientific Publisher, Frankfurt. The chapter constitutes an introductory **literature review on the concept of participation**, linking it to the concept to **sustainability assessment**. By performing desktop research and a comparative analysis, the results presented in this chapter provide an overview of sustainability assessment tools applied in universities. The analysis informs about to what extent participation is considered or not in these tools and addresses thereby the second (b) research question. The results of this research phase establish the ground for the semi-structured interviews in the next stage.

- **Part III** comprises the **empirical studies** of this research, published as two research papers in the following scientific journals:

“Sustainable universities – a study of critical success factors for participatory approaches”. *Journal of Cleaner Production (2015)*, 106, pp.11-21. doi: <http://dx.doi.org/10.1016/j.jclepro.2014.01.030>

“Participatory processes in sustainable universities – what to assess?”
International Journal of Sustainability in Higher Education (2015), 16 (5). doi:
10.1108/IJSHE-05-2014-0079

Semi-structured interviews and focus groups (N=51) were primarily conducted during academic conferences and meetings related to sustainability and ESD in higher education. The target groups were sustainability practitioners in HEIs (teaching and non-teaching staff as well as students). The main findings led to the identification of critical success factors (III.1-III.6) and possible assessment criteria for participatory approaches (III.7-III.11), and were divided into two papers respectively. This empirical part addresses in general all research questions and feeds directly into the designing step for designing a new assessment model.

- **Part IV** presents the **proposal of new assessment model**, the INDICARE-model, for assessing participatory approaches in sustainability initiatives. This chapter is an extended version of the following paper accepted for publication:

“The INDICARE-model - measuring and caring about participation in higher education's sustainability assessment”. *Ecological Indicators* (in press). doi:
10.1016/j.ecolind.2015.11.057

The development of this model was conducted in iterative stages: Starting with data triangulation from the previous research phases, another exhaustive literature review was conducted that led to deep personal reflections on how participatory approaches and their assessment can be transformative in order to truly foster a paradigm change towards sustainability. The evolving model, based on ecocentric perspectives (Naess, 2008; Orr, 2004) and following transformative learning theories (Argyris *et al.*, 1978, 1996; Mezirow, 1997, 2000), was discussed and adjusted along six feedback loops, having been presented to 98 persons during conferences, workshops and university meetings. This chapter aims to respond in particular to the third and fourth research questions (c and d) about how participatory approaches can be addressed holistically and advance the sustainability debate in HEIs.

These four parts are accompanied by this preceding chapter, serving as a general introduction to the thesis, and a last chapter about final reflections and conclusions in which the research questions are answered. Limitations of the study as well as an outlook on future research are included in the last chapter of this thesis. Subsequently follows the bibliography that compiles all cited sources of all chapters.

At the end of the thesis, two appendices are provided, in which all relevant research materials, such as interview guides, focus group structures, workshop schedules, questionnaires, evaluation sheets etc. are organised: Appendix A contains all materials used in part III, and appendix B contains all materials used in part IV.

Some organisational notes:

- Having opted for a cumulative thesis format, there are sections that may appear repetitive, as the research topic is introduced and contextualised in every publication.
- The use of some terminology like *sustainability versus sustainable development* or *Education for Sustainability versus Education for Sustainable Development* may not be consistent between different parts of the thesis and reflects the personal evolution when developing this work. In the beginning of the research, I justified to use these terms interchangeably, but at the end of the research I developed a personal preference for *Sustainability* and *Education for Sustainability*, as these are closer connected to ethical principals and bear less economic development connotations (Lozano, 2008; Waas et al., 2011).

I. Framing the theoretical context

Sustainability Science and Education for Sustainable Development (ESD) in Universities: A Way for Transition

Published in:

Disterheft, A., Caeiro, S.S., Azeiteiro, U.M., and Leal Filho, W. (2013). Sustainability Science and Education for Sustainable Development in Universities – a Critical Reflection. In S. Caeiro, W. Leal Filho, U.M. Azeiteiro & C.J. Chiappetta Jabbour (Eds.), Sustainability Practices in Higher Education Institutions – Mapping Trends and Good Practice at Universities Round the World (pp. 3-27). London: Springer UK

Abstract

The debate about sustainable development (SD) in higher education institutions has expanded over the past decades. It has been recognised that universities play a pivotal role in promoting sustainability principles, contributing to the paradigm shift towards a more sustainable present and future. Campus sustainability – commonly understood in a broad sense that includes the physical, educational (teaching, curricula, research), and institutional dimensions – is an evolving study field, as indicated by the growing number of articles in academic journals, conferences, awards, and books dedicated to the subject.

From the academic point of view, the emergent fields of sustainability science and Education for Sustainable Development (ESD) have advanced the efforts of mainstreaming sustainability and implementing concrete practices in universities. But despite some progress and good examples, only a few institutions follow a SD implementation process holistically. A one-sided trend of "going green", driven by market requirements, marketing advantages, and economic benefits, increases the risks of greenwashing. Reductionist models and misconceptions may cause sustainability initiatives to be wrongly reduced to single aspects of SD like environmental initiatives, losing meaning and credibility.

This chapter addresses the question of what role the emerging fields of sustainability science and Education for Sustainable Development can play within the transition to more sustainable universities. It aims to contribute to a more holistic perception of SD and examines some of the trends being observed in the higher education sector. Universities are challenged to reflect about educational objectives and strategic goals in their sustainability implementation processes, if they aim to educate the academic community beyond eco-efficiency and recycling. ESD and sustainability science are normative academic fields, action-oriented and close to society. Along with universities as democratic institutions, these fields constitute essential vehicles to investigate, test, and develop conditions for truly transformative change.

I.1 Introduction

Sustainable development (SD) and the question of how to overcome global and local challenges such as climate change, social inequity, poverty, loss of biodiversity, overpopulation, and lack of resources, has been discussed at the highest international political level for over four decades. The concept of SD has become globally accepted as a concept to guide interactions between nature and society in order to master these challenges, calling for a paradigm change at all levels, including education.

Within this debate, universities have been charged with key roles in promoting and implementing SD (UNCED, 1992 (Ch.36)). Many scholars see the impact of universities on SD as vastly greater than any other single sector of society (Cortese, 1999, 2003; Orr, 2004), because universities educate the next generation of decision-makers, influencers and leaders (ibid., Lozano, 2006a; Chambers, 2009). Due to their high societal impact, universities are seen as multipliers for disseminating SD principles with the ethical obligation to systematically integrate SD into their institutions (UNCED, 1992; Cortese, 1999; van Weenen, 2000; Sharp, 2002; Cortese, 2003; Hansen *et al.*, 2006). An increasing number of universities have responded, and much progress in the implementation of SD in universities has been achieved.

The emerging fields of sustainability science and Education for Sustainable Development (ESD) can be seen as an evolving scientific foundation for the advancement of sustainability, including the transition to sustainable universities.

This chapter concerns these emerging fields and their role within SD implementation processes in universities. The objective of this chapter is two-fold: (i) to offer a literature review with the purpose of sharing some of the most recent advancements and discussions in these emerging scientific fields; (ii) to discuss some trends across the university landscape that are adverse to a holistic sustainability implementation in higher education, posing challenges for sustainability science and ESD in universities. In this way, it is hoped to broaden the overall debate about SD and the visions for a sustainable future.

Sustainability science has emerged over the last decade as a new interdisciplinary field that attempts to conduct problem-driven and action-oriented research on the challenges mentioned above, striving to link knowledge to social actions and creating new visions of natural and social well-being (Miller, 2013). ESD, being part of the sustainability discourse and policy-making process since the very beginning, has been influencing the debate on learning objectives, content, pedagogies and competencies necessary for the paradigm shift to SD.

Both fields, sustainability science and ESD, share some similarities, as they (i) are problem-driven, (ii) employ use-inspired basic research and (iii) deal with problems of practice and policy (Barth *et al.*, 2013a)

They can therefore be considered essential for university research on sustainability.

Campus sustainability, commonly understood in a broad sense that includes the physical, educational, and institutional dimensions, is a growing study field, as proven by the increasing number of articles in academic journals (e.g. in the *Journal of Cleaner Production* (Elsevier), *International Journal for Sustainability in Higher Education* (Emerald), *Journal of Education for Sustainable Development* (SAGE), *Sustainability Science* (Springer), *Higher Education Policy* (Palgrave) and others). On the institutional

level, many declarations of commitment have been signed (Wright, 2002; Leal Filho, 2011; Lozano *et al.*, 2013b) and the high number of best practice examples and case studies are a sign of the growing importance SD implementation is obtaining (see e.g. the series of the Global University Network of Innovation on social commitment of universities 1-4, GUNI (2012)).

Despite the progress made and some signs of transition in parts of the academic community, there is still a long way to go to mainstream sustainability in higher education, and a paradigm shift from unsustainability to sustainability is still difficult to identify (Wals, 2014). Even institutions with many years of experience in the field of campus sustainability are caught in situations that hinder a full sustainability implementation (Escrigas, 2012; Raskin, 2012; Lozano *et al.*, 2013a). It is still too early to speak of a paradigm shift on a broader scale, since the literature suggests that universities have not yet understood the full scope of sustainability challenges (Tilbury, 2012) and might be stuck in traditional academic structures and mechanistic mental models (Lozano *et al.*, 2013b). Furthermore, due to the overuse of terms like SD, sustainability and an increasing trend of 'going green' that reduces sustainability to only its environmental aspects, there is a risk of 'greenwashing' and sustainability initiatives losing meaning and credibility, often driven by global market requirements (Schwarzin *et al.*, 2012).

The chapter starts by introducing the theoretical context. A brief summary about the concepts of sustainable development and sustainability is given, in which some common misconceptions are pointed out and differences between strong and weak sustainability are explained. Building on this, a brief literature review about sustainability science and ESD is presented. In the next section, the theoretical context is applied to the question of sustainability implementation in universities. Specific characteristics of the university system and related fields of action for sustainability are noted. Milestones in policy-making for sustainability in higher education are contrasted with practical difficulties encountered in implementing these policies. The section that follows deals with the role of sustainability science and ESD within the

transition to sustainable universities. University-specific recent advancements in these fields are outlined and put in contrast to trends in higher education that prevent a holistic implementation of the ideas of sustainability. Trends such as a constantly more economy-driven university deviate higher education from sustainability-driven process. The authors name these situations 'transfer problems' as they stand for the gap between proclamation and practice and as they make the shift from unsustainability to sustainability more difficult. Challenges deriving from these transfer problems are discussed and linked to the role sustainability science and ESD can play in decreasing the gap. The chapter finishes with some concluding remarks about potential future progress for sustainability science and ESD in universities.

1.2 Theoretical context

The theoretical context is divided into three subsections and focuses first on different interpretations of sustainable development and sustainability in order to present then the fields of Sustainability Science and Education for Sustainable Development.

1.2.1 Debating Sustainable Development and Sustainability

The concepts of sustainable development and sustainability have been discussed broadly in the literature (e.g. Kirkby *et al.*, 1995; Hopwood *et al.*, 2005; Baker, 2006), and it is useful to briefly recall some of the main aspects of this conceptual, ideological, and terminological debate for the reflections in this chapter.

Usually, the origins of the debate about sustainable development are associated with the publication of "Limits to Growth" by the Club of Rome in 1972 (Meadows *et al.*, 1972) and to the UN conference on the Human Environment, held in Stockholm in the same year, but the origin of the concept itself can be traced back 300 years when Hans Carl von Carlowitz published the first work about sustainable forestry (Saechsische Carlowitz-Gesellschaft, 2013), and to T.R. Malthus (1766-1834) who noted the environmental limits to population growth (Mebratu, 1998). So, despite the habit of linking the emergence of the sustainability concept to the post-industrial era,

it is much older. But there is general agreement among scholars that the WCED-report "*Our common future*" (World Commission on Environment and Development (WCED), 1987), also known as the Brundtland Report, has mainstreamed the concept and spread the nowadays best known and most often quoted definition for sustainable development: "*SD is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*".

While this definition establishes links between the social, economic, and environmental dimensions, it is also criticized for its anthropocentric focus and its vagueness (Mebratu, 1998; Baker, 2006; Lozano, 2008; Waas *et al.*, 2011). Some scholars recognize that due to its vague characteristics the concept of SD allows several definitions and interpretations to co-exist (Waas *et al.*, 2011). Others see the possibility of building on a minimal common understanding as a political strategy (Daly, 1996). However, an "anything-goes-mentality" (Waas *et al.*, 2011, p. 1638) or a simple "feel-good-sustainability" (Jickling *et al.*, 2012) only weaken the concept, which is counterproductive to all serious sustainability efforts.

Conceptual analyses of the SD concept look at its historical evolution (Mebratu, 1998; Fergus *et al.*, 2005a; Waas *et al.*, 2011), as well as at differences in the perceptions identifying e.g. an institutional, ideological, and academic version (Mebratu, 1998). Different models vary in the number of 'pillars' or dimensions of SD (Baker, 2006; Lozano, 2008; Waas *et al.*, 2011). Whereas it had been common to envision at least three pillars of SD - economic, social, and environmental, in recent years it has become normal to add fourth and fifth pillars - institutional and cultural (Waas *et al.*, 2011). SD models help to visualize the complex and dynamic interrelations among these pillars, but are often highly anthropocentric and compartmentalised, lacking conceptual coherence and the dimension of time (Lozano, 2008).

Baker (2006) discusses in her ladder of sustainable development (*ibid.*, p.30) four different models of sustainable development – (i) pollution control, (ii) weak SD, (iii) strong SD, (iv) the ideal model; – and compares e.g. normative principles, governance, technology, policy integration and tools, and the underlying philosophy of each model,

which moves from an anthropocentric to a more and more ecocentric worldview, with correspondingly stronger concepts of SD. *Weak sustainability* stands for a substitutability paradigm, in which natural capital as input for consumer goods is substitutable by man-made capital. The model relies on the assumption that technical progress can overcome any resource constraints (Neumayer, 2010). *Strong sustainability* on the contrary seeks to maintain nature's functions intact and builds on the preservation of physical stock and all forms of non-substitutable natural goods (ibid.).

The term *sustainable development* is sometimes applied to economic growth as a development strategy, SD being the process to achieve a 'better' type of growth, whereas the term *sustainability* would give more emphasis on the environment and stand for the final goal of humanity being able to live within the environmental limits of the planet (Fergus *et al.*, 2005b; Lozano, 2008; Waas *et al.*, 2011). However, separating these terms is not a common practice in the literature, so this chapter follows the usual approach of using these terms interchangeably. Furthermore, there exists a consensus about the basic principles that the ideas of SD and sustainability comprise (UNEP, 1992; Baker, 2006; Waas *et al.*, 2011): normativity, intra- and intergenerational equity, justice, gender equality and participation. These principles have been endorsed by the Rio Declaration at the UN Earth Summit in 1992 and are usually associated to both terms equally.

1.2.2 Sustainability Science

Sustainability science is a relatively young scientific field, still lacking shared conceptual and theoretical components (Kates *et al.*, 2001; Clark *et al.*, 2003), which emerged about two decades ago. At the beginning of 2000 a number of scientists (Kates *et al.*, 2001) agreed on some common approaches for sustainability science:

“[To] encompass the interaction of global processes with the ecological and social characteristics of particular places and sectors; integrate the effects of key processes across the full range of scales from local to global; and achieve fundamental advances in our ability to address such issues as the behaviour of complex, self-organizing systems, as well as the responses of the nature-society system of governing to multiple and interacting stresses” (Jaeger, 2009, p. 2).

In other words, it investigates the complex and dynamic interactions between natural and human systems and how these can be transformed in a sustainable way based on a long-term perspective.

The questions in Table I.1 demonstrate the wide range of topics and underline the idea that sustainability science refers to “multiple sciences addressing a common theme – the reconciliation of societies’ development goals with the planet’s environmental limits over the long term” (Jaeger, 2009). The underlying motivation for this type of research can be described as “neither *basic* nor *applied* research, (...) [but as] *use-inspired basic research*” (Clark, 2007, p. 1737).

Table I.1: The Core Questions of Sustainability Science

Core Questions of Sustainability Science	
1	How can the dynamic interactions between nature and society – including lags and inertia – be better incorporated into emerging models and conceptualizations that integrate the Earth system, human development, and sustainability?
2	How are long-term trends in environment and development, including consumption and population, reshaping nature-society interactions in ways relevant to sustainability?
3	What determines the vulnerability or resilience of the nature-society system in particular kinds of places and for particular types of ecosystems and human livelihoods?
4	Can scientifically meaningful ‘limits’ or boundaries be defined that would provide effective warning of conditions beyond which the nature-society systems incur a significantly increased risk of serious degradation?
5	What systems of incentives structures – including markets, rules, norms, and scientific information – can most effectively improve social capacity to guide interactions between nature and society toward more sustainable trajectories?
6	How can today’s operational systems for monitoring and reporting on environmental and social conditions be integrated or extended to provide more useful guidance for efforts to navigate a transition toward sustainability?

Source: (Kates et al., 2001)

Since sustainability science does not have a common definition, scholars usually refer to its main characteristics or set of principles, which are (i) its transdisciplinarity,

(ii) the providing of an integrated analysis, and (iii) its direction towards action (Kates *et al.*, 2001; Rapport, 2007; Kauffman, 2009; Lang *et al.*, 2012).

Sustainability science above all means to bridge the gap between science and society and to link knowledge to action for sustainability (Wiek *et al.*, 2012). These ideas embrace the principles of Education for Sustainable Development (ESD), an emerging field within educational science with strong ties to sustainability science.

I.2.3 Education for Sustainable Development (ESD)

“Education either functions as an instrument which is used to facilitate integration of the younger generation into the logic of the present system and bring about conformity or it becomes the practice of freedom, the means by which men and women deal critically and creatively with reality and discover how to participate in the transformation of their world.”
Paulo Freire (1972)

The debate about sustainable development has also initiated the debate about an educational concept that would help to achieve the goals of sustainability: Education for Sustainable Development (ESD). It has been a field for international educational policy-making since the beginning of the SD debate. The ESD concept started being institutionalized in 1992 with the international recognition of Agenda 21 and its specific chapter 36 about education at the UN Earth Summit in Rio de Janeiro (UNCED, 1992). The UNESCO was assigned to be the task manager of the implementation of Agenda 21's chapter 36, and ESD received growing attention worldwide. Further milestones were the UNESCO report *“Education for a Sustainable Future”* (UNESCO, 1997), in which the necessity of a reorientation of education in all sectors and the key principles of ESD are stressed, and the launch of the *UN Decade on Education for Sustainable Development* (2005-2014) that stimulated numerous projects on all educational levels. The *“World Conference on ESD - Moving into the Second Half of a UN Decade”*, that took place 2009 in Bonn, gave opportunity for reflections on achievements and put a new focus on monitoring and assessment, leading to ESD evaluation reports of several experts (Tilbury, 2011; Wals *et al.*, 2012).

The educational concept of ESD refers to all educational levels, from kindergarten to primary, secondary, and tertiary education until life long learning, and consists of different learning objectives, content foci, and pedagogical approaches. Even though having clear links to environmental education, ESD goes much beyond this and seeks to:

- Promote and improve the quality of a lifelong education that is directed to the acquisition of knowledge, skills and values necessary for citizens being able to improve their quality of life;
- Reorient the curricula (rethinking and reforming education);
- Raise public awareness for the concept of SD;
- Train the workforce for a better understanding of ESD and how to integrate it in the curriculum.

(Læssøe *et al.*, 2009; Wals, 2009a)

Reflecting the difficulty in defining sustainable development, ESD also has no single, uncontested definition, and often terms such as *Education for Sustainability (EfS)* or *Sustainability Education (SE)* are used interchangeably. Other terms used less frequently are: Earth Education; Environmental and Developmental Education; Environmental Education for Sustainability; Education for a Sustainable Future; Education as Sustainability; and Sustainable Development Education (Leal Filho *et al.*, 2009).

There is a divergent debate about the meaning and objectives of ESD, and McKeown *et al.* (2006, p. 9) link it to the challenge of envisioning a sustainable world and how humanity can achieve it: “(...) while we have difficulty envisioning a sustainable world, we have no difficulty identifying what is unsustainable in our societies”, and list several problems of 'un-sustainability', like inefficient use of energy, lack of water conservation, increased pollution, abuses of human rights, overuse of personal transportation, consumerism, etc. (ibid.). The authors compare the lack of a definition for ESD to the concepts of justice and democracy, which are “great concepts”, but approached differently depending on worldviews and cultures. As an

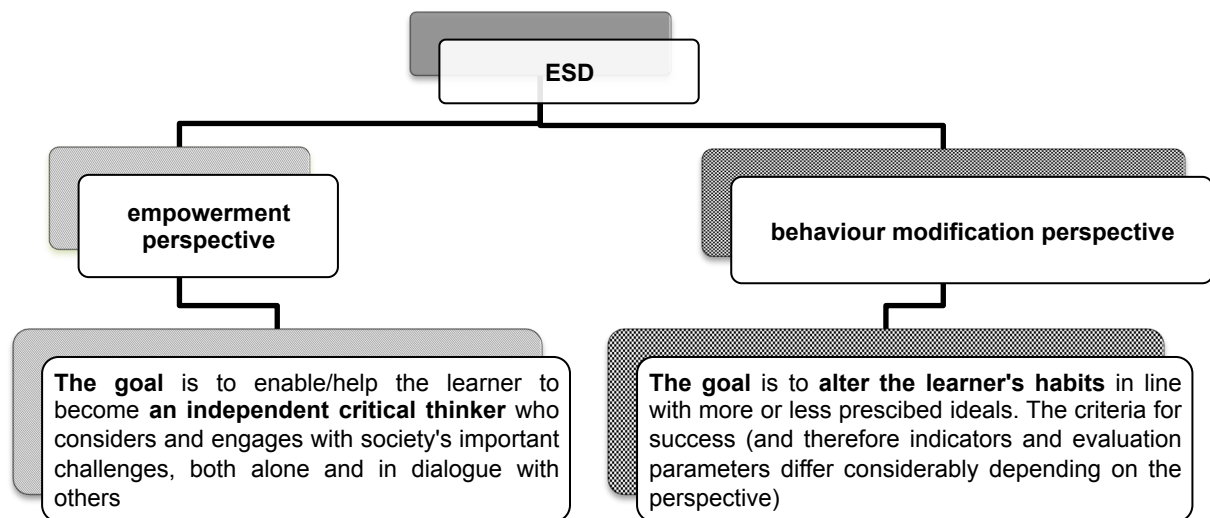
important step of differentiation, scholars distinguish between (a) *education about sustainable development* and (b) *education for sustainable development*. Whereas the first may refer mainly to knowledge transfer about SD, transmitting facts about sustainability concepts without challenging existing assumptions, the second underlines the perception of a learning process, focussing more on a transformative approach to education (McKeown *et al.*, 2006; Barth *et al.*, 2013a). This focus is also set in the definition for ESD by UNESCO:

“Education for Sustainable Development (ESD) is a learning process (or approach to teaching) based on the ideals and principles that underlie sustainability and is concerned with all levels and types of learning to provide quality education and foster sustainable human development – learning to know, learning to be, learning to live together, learning to do and learning to transform oneself and society” (UNESCO, 2011).

This learning process can, however, have different objectives, and Læssøe *et al.* (2009) argue in their cross-national study that there are two distinct approaches, directed to different learning outcomes (Figure 1.1).

Whereas the empowerment perspective focuses on enabling students to become independent critical thinkers, the behaviour modification perspective strives for changes in habits. Vare *et al.* (2007, pp. 193-194) went in their analysis a little further and differentiate between ESD 1 and ESD 2: the first type comprises an approach of "promoting/facilitating changes in what we do" as well as "promoting (...) behaviours and ways of thinking", which the authors label as "Education for Sustainable Development". The second type refers to an approach of "building capacity to think critically (...) and exploring the contradictions inherent in sustainable living" (*ibid.*, p. 193-194), calling it "Education as Sustainable Development" and underlining the overall process-oriented attitude of any way of learning.

Figure I.1: ESD from the empowerment and the behaviour modification perspective



Source: (based on Læssøe et al. (2009))

The authors regard both types as complementary (the "yin-yang of ESD", *ibid.*, p.195), but stress the importance of ESD 2 because "our long-term future will depend less on compliance in being trained to do the right thing now, and more on our capability to analyse, to question alternatives and to negotiate our decisions" (*ibid.*, p. 194), as future scenarios are uncertain and request overall being able to approach new challenges systemically. In this context, Barth *et al.* (2013a, p.107) underline the normativity of the educational concept of ESD that lies "between the two poles of indoctrination and value-relativism". On the one hand, using education for political and social goals is considered inappropriate, and on the other hand the nature of education is based on human values, history, and changes in power relationships and so can never be value-neutral. ESD pedagogies should therefore foster the capacity of critical reflection. These pedagogies are often rooted in existing educational concepts like problem-based learning, social learning, situated learning, social-constructivist approaches to learning (e.g. discovery learning, participatory learning), systems thinking-based learning, among others (Steiner *et al.*, 2006; Wals *et al.*, 2012; for an overview see Barth *et al.*, 2013a). By linking these learning approaches to challenges

related to sustainability, e.g. complexity, uncertainty, and interdisciplinarity, the ESD concept becomes unique (Barth *et al.*, 2013a).

I.3 From theory to practice: Universities implementing sustainability

An increasing number of universities have started to translate the theoretical background into practice. First, the university system and fields of action for sustainability are presented, followed by a summary of milestones in related policy-making.

I.3.1 The university system and fields of action for sustainability

Cortese (2003) identifies four dimensions of a university system: Education, Research, University Operations and External Community, which often have been seen as discrete, based on hierarchical and competitive structures. Lozano (2006a) adds a fifth dimension of Assessment and Reporting. These dimensions should be considered as interconnected and dealt with in a comprehensive, dynamic and horizontal manner, as indicated by Lozano (*ibid.*), since they are crucial for implementing sustainable development in a holistic way. Strategies that are geared to sustainable universities should move beyond eco-efficiency (Shriberg, 2002), as there is still an emphasis on the environmental issues and less attention paid to non-materialistic aspects of sustainability related to social, cultural and ethical questions. However, progress has been made in curriculum greening (Lidgren *et al.*, 2006), campus operations (e.g. environmental management systems and their educational dimension) (Disterheft *et al.*, 2012b), system transition approaches involving large groups of stakeholders (Ferrer-Balas *et al.*, 2009), outreach programmes (Johnson Butterfield *et al.*, 2005) and on assessment and reporting (Lozano, 2011). There are also specific conferences with a focus on SD implementation in universities (like the conferences of the Global University Network for Innovation (GUNI), of the Association for the Advancement of Sustainability in Higher Education (AASHE), the Environmental Management for Sustainability in Universities (EMSU) conference and the World Symposium Sustainable Development in Universities (WSSD-U)) as well as sustainability assessment tools (e.g.

AISHE, GASU®, STAUNCH® among others, see Disterheft *et al.* (2012a) for an overview), rating systems (e.g. STARS, Green League) and excellence awards (e.g. Sustainable Campus Excellence Awards) or certifications.

1.3.2 Some milestones in policy-making for sustainability in higher education

At the macro- and meso-level, there have been developed and endorsed more than twenty declarations and policy documents in which higher education institutions declare their commitment to SD (Wright, 2002; Leal Filho, 2011; Tilbury, 2012; Lozano *et al.*, 2013b). All of them are based on a moral obligation towards promoting and contributing to sustainable development within universities: “Perhaps the unifying theme among all declarations and policies is the ethical and moral responsibility of universities to be leaders in promoting sustainability” (Wright, 2002).

Wright (*ibid.*) and Lozano *et al.* (2013b) examined in detail declarations up to 1997 and 2009, respectively. As a matter of completeness, the list was updated to the present by consulting further literature sources and conducting an internet search (Table I.2).

In general these declarations can be seen as landmarks, and if properly implemented they can contribute to facilitating change and integrating sustainable development into the universities’ landscape. Nevertheless, Wright warns that without an implementation plan these policies remain just a statement of intent and run the risk of serving only to ‘greenwash’ the institutions’ image (Wright, 2002; 2006). In preparation for the Rio+20 conference in June 2012, Leal Filho (2012) gave a damning appraisal of these declarations: “Except for the Ubuntu Declaration, which has been pursued by a number of organisations since Johannesburg, the majority of the other declarations, agreements and action plans have one thing in common: they have never been fully implemented”. Bekessy *et al.* (2007) see the lack of accountability of universities as the main problem. In their analysis of the Australian RMIT University’s 12-year engagement with sustainability they conclude (*ibid.*, p. 314):

“(...) neither non-binding international declarations nor individuals or small groups are the answer to lasting institutional transformation. (...) The positive publicity that universities receive from signing declarations and

releasing policy precedes putting them into practice, and it seems that there is little or no motivation to deliver on commitments, or public accountability for failing to deliver. Failure to implement rhetoric is classic greenwash and sends a message to other institutions, companies, governments, and society as a whole that universities do not value sustainability, and are unable to implement it.”

Christensen *et al.* (2008) analysed official university documents of the University of Aalborg (Denmark) from 1990 to 2007, assessing the gap between preaching and practice. The authors ask “How to teach sustainability without practicing it?” (ibid., p. 16) and draw the conclusions that “good intentions are certainly not enough to create a vibrant and engaging working commitment that will make sustainable university practices live on for years” (ibid., p. 18). These examples show that the institutional debate about SD is not finished after the first steps of SD implementation have been undertaken, and actually call for continuous revision and new reengagement. Sustainability science and ESD can contribute systematically to reviewing sustainability implementation in higher education and promoting stronger commitment, as will be discussed in the next section.

Table I.2: Chronology of Some Declarations Related to Sustainability in Higher Education

Year	Declaration
1972	The Stockholm Declaration On The Human Environment (UNEP, 1972)
1977	Tbilisi Declaration (UNESCO, 1977)(UNESCO, 1977)
1988	The Magna Charta of European Universities (European University Association, 1988) (European University Association, 1988)
1990	University Presidents for a Sustainable Future: The Talloires Declaration (ULSF, 2008)
1991	The Halifax Declaration (International Institute for Sustainable Development, 1996)
1992	Agenda 21 Report of the United Nations Conference on Environment and Development – Chapter 36: Promoting Education, Public Awareness and Training (UNCED, 1992)
1993	Ninth International Association of Universities Round Table: The Kyoto Declaration (Wright, 2002)
1993	Association of Commonwealth Universities’ Fifteenth Quinquennial Conference: Swansea Declaration (Wright, 2002)
1994	CRE Copernicus Charter (COPERNICUS, 1994)
1997	International Conference on Environment and Society – Education and Public Awareness for Sustainability: Declaration of Thessaloniki (UNESCO, 1997a)
1998	World Declaration on Higher Education for the twenty-first century: Vision and Action (UNESCO, 1998)
2000	Earth Charter (<i>directed to all education areas, not higher education-specific</i>) (Earth Charter Initiative, 2010)
2001	Lueneburg Declaration (UNESCO, 2001)
2002	Ubuntu Declaration (United Nations, 2002)
2005-2014	The UN Decade Education for Sustainable Development (UNESCO, 2010)(UNESCO, 2010)
2005	Graz Declaration on Committing Universities to Sustainable Development (Leal Filho, 2011)
2006	Declaration on the Responsibility of Higher Education for a Democratic Culture – Citizenship, Human Rights and Sustainability (Council of Europe, 2006)
2008	G8 University Summit Sapporo Sustainability Declaration (Leal Filho, 2011)
2009	Abuja Declaration on Sustainable Development in Africa (Lozano <i>et al.</i> , 2013b)
2009	Tokyo Declaration of HOPE (<i>directed to all education areas, not higher education-specific</i>) (ACCU, 2009)
2009	Turin Declaration on Education and Research for Sustainable and Responsible Development, Italy (Tilbury, 2012; Lozano <i>et al.</i> , 2013b)
2009	World Conference on Higher Education (UNESCO) (Tilbury, 2012)
2010	G8 University Summit: Statement of Action (Leal Filho, 2011)
2011	Copernicus Charta 2.0. (Copernicus Alliance, 2012a)
2012	People’s Sustainability Treaty on Higher Education (Copernicus Alliance, 2012b)
2012	UN Higher Education Sustainability Initiative within Rio+20 (United Nations, 2012)

Source: (adapted and expanded from Wright (2002), Leal Filho (2011), Tilbury (2012) and Lozano *et al.* (2013b)

I.4 The role of Sustainability Science and ESD within the transition to sustainable universities

This section touches on the continuous development of sustainability science and ESD, providing first some background and advancements in these fields. Then, problems of transferring these fields into practice are discussed and synthesized into challenges lying ahead.

I.4.1 Background

It has been demonstrated above that sustainability science comprises a broad set of areas and topics, aiming to create knowledge that fosters new approaches in addressing the complex sustainability challenges of our world today. ESD is the educational concept to complement and stimulate these approaches. Both fields are not higher education-specific, but the growing research on sustainability in higher education can be linked closely to these emerging sciences (Wiek *et al.*, 2011; Barth *et al.*, 2013a). However, these links might not be clear to everybody. There are some scholars who see the necessity to study further how university research for SD relates to other sustainability research fields, for example sustainability science (Waas *et al.*, 2010). They define university research for sustainable development as "*all research conducted within the institutional context of a university that contributes to sustainable development*" (ibid.).

In this section, this type of research is embedded in the broader fields of sustainability science and ESD, as suggested in a great part of the literature. With a focus on higher education, it discusses some of the most recent advancements as well as transfer problems and challenges on the practical level.

I.4.2 Advancements

Interesting research is going on in these emerging fields: several research agendas and evolving frameworks have been developed for sustainability science in general (Jerneck *et al.*, 2011; Schoolman *et al.*, 2012; Miller, 2013), and for higher education in particular (Stephens *et al.*, 2010; Waas *et al.*, 2010; Yarime *et al.*, 2012b). Some scholars ask whether the concept of SD influences educational science with regard to

teaching and learning development as an "outside-in approach" (Barth *et al.*, 2013a) or whether educational science contributes to sustainability science as an "inside-out approach" (ibid.). Similarly, Lozano *et al.* (2013a) ask whether universities are taking the lead in the advancement of SD mental models or merely reacting to the stimuli from society.

Tilbury (2012) distinguishes shifts in the research for sustainability in higher education over the past ten years toward more inclusiveness and higher social impact (Table I.3).

Table I.3: Key movements in research for sustainability in higher education over the last ten years (~2000-2010)

Shifts from	To be more inclusive of
Research that is disciplined focused	Research that is inter- and multidisciplinary
Research that has academic impacts	Research that has social impact
Research that informs	Research that transforms
Research on technological and behaviour change	Research that focuses on social and structural change
Research as expert	Research as partner
Research on people	Research with people

Source: Tilbury, 2012, p. 21

Bibliometric studies on ESD research in universities (Barth *et al.*, 2013b; Wals, 2014) have shown that environmental sustainability has been the dominating research focus - e.g. environmental management, university greening and reducing the university's ecological footprint -, but a recent shift in the research focus can be confirmed: articles on pedagogy, learning, community outreach and partnerships are appearing more frequently (Wals, 2014). However, these analyses have also shown that the majority of publications are descriptive case-study articles, with "minimal cohesion and some

degree of repetition and redundancy" (Stephens *et al.*, 2010, p. 611) and still lack a stronger theory development (*ibid.*).

Among these topics, the debate about competencies has gained particular visibility (de Haan, 2006; Posch *et al.*, 2006; Barth *et al.*, 2007; Mochizuki *et al.*, 2010; Parker, 2010; Wals, 2010b; Wiek *et al.*, 2011; Rieckmann, 2012). Unfortunately, the terminology used in this debate is not always clear. Although scholars distinguish between *competencies for sustainability* and *competencies for ESD*, either of these terms may have different understandings: Wals (2010; 2013) understands *sustainability competencies* as those abilities that learners should develop when they engage in ESD, whereas *ESD competencies* refer to the abilities of the person who facilitates ESD in transmitting SD competencies to the learner. On the contrary, Wiek *et al.* (2011) distinguish between *key competencies in sustainability* and *basic competencies*: the first refer to competencies transmitted in specific higher education programs and courses in sustainability, namely (i) *systems thinking competence*, (ii) *anticipatory competence*, (iii) *normative competence*, (iv) *strategic competence*, and (v) *interpersonal competence*. Basic competencies, such as *critical thinking* and *communication*, are considered equally important, but taught in other contexts not necessarily sustainability-specific. Rieckmann (2012) arrives at similar terms but does not differentiate between sustainability-specific and non-sustainability specific competencies. He considers them all equally relevant for future-oriented learning and builds on the ideas about *Gestaltungskompetenz* (de Haan, 2006) and transformative social learning (Palmer *et al.*, 2010; Wals, 2010b; Brundiers *et al.*, 2011; Schwarzin *et al.*, 2012). *Gestaltungskompetenz* can be translated by "shaping competences" (Baer *et al.*, 2012) and is understood as a forward-looking ability to "modify and model the future of the societies that you live in, participating actively in the spirit of sustainable development" (de Haan, 2006, p.22). As key competences for ESD, de Haan (2006) identifies (i) competences in foresighted thinking; (ii) competence in interdisciplinary work; (iii) competence in cosmopolitan perception; cross-cultural understanding and cooperation; (iv) participatory skills; (v) competence in planning and implementation; (vi) capacity for empathy, compassion and solidarity; (vii) competence in self-

motivation and in motivating others; (viii) competence in distanced reflection on individual and cultural models.

These approaches can be grouped under the empowerment-perspective as outlined earlier in this chapter and may indeed be a sign of shift towards a research that strives for transformation rather than information and for social and structural change, rather than technological and behavioural change (Table I.3).

Some authors alert that the competence approach is too narrow when related only to workplace performance without being also directed towards the goals of sustainability (Mochizuki *et al.*, 2010). Tilbury (2012, p. 24) argues that "teachers, architects, accounts, doctors and business managers are still being schooled into social assumptions and practices that serve to exploit people and planet". The development of specific courses and programmes on sustainability, usually called a *built-on approach*, would only improve the sustainability literacy of a self-selected group who wish to follow a career in this field (*ibid.*). Instead, a *built-in approach* is needed that integrates sustainability in existing study and research (Wals, 2014). For Wals (*ibid.*), the concept of SD is still understood in too limited a manner, as "sustainability (...) remains still largely external to the student, academic faculty member, and administrator within higher education". Therefore, the reorientation of teaching, the renewal of the curricula and learning methods, and the offering of learning opportunities in higher education for staff members are considered to be key elements in the transition towards sustainability and more sustainable institutions. One pillar in this discussion is training the workforce (Zilahy *et al.*, 2009; Barth *et al.*, 2012). With regard to academic staff development in higher education institutions, there are already promising studies which describe specific programmes for teaching staff members in universities. These programmes show diverse opportunities for new learning and teaching approaches that can lead to a deeper implementation of ESD in higher education institutions (Huisingh *et al.*, 2000; Barth *et al.*, 2012).

I.4.3 Transfer problems

Despite some progress there appear to be several transfer problems that make a so often proclaimed paradigm shift to more sustainability difficult. Scientists would agree that the state of the planet has worsened in the last twenty years, in environmental terms, but also in social terms regarding issues of inequity, marginalisation and poverty (Jickling *et al.*, 2012). Universities are caught in a crossfire of influences, and so are sustainability science and ESD implementation processes. The advancements reported above contrast to other trends that can be observed in higher education.

From a macro level perspective:

- Universities orient their activities to more economic-driven directions, with a strong belief in the power of market mechanisms and competition (Raskin, 2012; Schwarzin *et al.*, 2012), based on a business-as-usual approach instead of sustainability principles. A new model of the *entrepreneurial university* can be identified that “utilizes relations with industry and government in order to contribute to an innovation-driven regional or national economic growth strategy” (Yarime *et al.*, 2012b, p. 102). Other signs are technology parks, academic inventions (e.g. via spin-off firms or ventures), collaborative and commissioned research, consulting (*ibid.*). Quality assessment based on number of publications and student numbers decisive for the university ranking have become primary concerns of university leaders (O'Brien *et al.*, 2013).
- Privatization of public education and increase of private universities as a response to the 'knowledge economy'. The UNESCO report *Trends in Global Higher Education* (Altbach *et al.*, 2009, p. 69 et seq.) discusses the problematic issues of (in-)equity in accessing higher education and describes the trend of the marketization of education with rising tuition fees and decreasing scholarships as one of the biggest challenges for a sustainable higher education sector.

From a meso- and micro level perspective:

- Universities remain traditional and follow old mechanistic mental models (e.g. Newtonian and Cartesian paradigms) (Lozano *et al.*, 2013a) with strong disciplinary structures that hinder inter- and transdisciplinary approaches.
- Even though a holistic approach in sustainability is often proclaimed, a narrow perception of sustainability prevails, focusing on the environmental and economic aspects of SD (Leal Filho, 2009; Global University Network for Innovation (GUNI), 2012). As a consequence, sustainability initiatives at the campus run the risk of serving greenwashing purposes.
- According to the literature, some of the barriers within campus sustainability implementation include: (a) misconceptions of the concept of SD (e.g. sustainability is too broad, too abstract, too theoretical, too recent), (b) conservatism or unwillingness to change, (c) discipline-restricted organisational structures, (d) procrastination, (e) power-related aspects, (f) lack of support, (g) lack of relevant and complete SD information, (h) lack of SD awareness, (i) over-crowded curricula, (j) fear of extra work (Leal Filho, 2000; Dahle *et al.*, 2001; Lozano, 2006a; Leal Filho, 2011).

1.4.4 Challenges

As a response to these problems, what can the role of sustainability science and ESD in higher education be? How can we achieve more effective knowledge transfer and broader engagement that indeed bridges the gap between science and society? Some reflections are outlined below:

- Sustainability science and ESD are value-driven, following normativity principles of sustainability, which put them in a special position, as their research approaches are not neutral. The economy-oriented trend in universities, which becomes especially problematic when the idea of contributing to *society* becomes synonymous with contributing to the *economy* (Yarime *et al.*, 2012b), is entering as

well the sustainability discourse, e.g. through the concept of a Green Economy¹. Yarime *et al.* (ibid.) alert to several disadvantages for universities following this trend: (i) the entrepreneurial model and conventional technology transfer practices are not necessarily appropriate for promoting larger socio-technical innovation; (ii) this model is not focused on the sustainable development of local and regional communities; (iii) it follows a paradigm that incentivizes business-as-usual economic growth and does not compulsorily address pressing social or environmental issues; (iv) negative effects of corporate-like competition may push aside the academic tradition of open sharing and collaboration. Here, a stronger debate about the concept of SD is required that puts into discussion strong vs. weak sustainability and stimulates visions of a more sustainable present and future encouraging alternatives to the business-as-usual model. From an educational point of view, the observed managerial approach favours educating people *to adapt to change* rather than building their capacity *to shape and create change* (O'Brien *et al.*, 2013). Here, the already mentioned reorientation of curricula and learning needs to be led by ESD scholars.

- Social sustainability - which e.g. focuses on equity of access to key services, including education, and on community responsibility in a long-term, inter-generational perspective - relates to institutional changes in the HEI governance model and changes in the curriculum, but these appear to be less central to the sustainability research agenda in universities. The most innovative and eco-efficient university would fail the sustainability principles of social justice if it addresses only a small group of elite students with sufficient financial capacities to

¹ The concept of green economy (GE) emerged primarily outside the context of the SD framework and is not built on sustainability principles (Baer *et al.*, 2012). The Rio+20 summit in 2012 can be seen as an attempt to introduce the GE concept into the SD debate, and it was strongly promoted by some global players, whilst at the same time being received sceptically and rejected by others (Brand, 2012; Bullard *et al.*, 2012). GE is based on pillars like the environmental technology sector and green jobs, and strives for economic measurement beyond GDP. It still adheres basically to the concept of economic growth as a strategy for human well-being while reducing environmental risks and ecological shortages (Jones, 2012).

attend their programmes. Noam Chomsky's recent speech on 'Public Education and The Common Good' (Cohen, 2013) is a valuable source for rethinking financing higher education. These problems are still lacking in the research agenda for sustainability in higher education.

- Ranking/assessment tools and evaluation procedures focus on economic numbers instead of sustainably oriented governance models and future-oriented curricula / learning and teaching approaches. Here, sustainability research in universities can offer alternatives (see e.g. Lukman *et al.* (2010)). Sustainability assessment in higher education has become a growing study field (see Part II, Table II.3 for sustainability assessment tools applied in universities). However, it remains a challenge that assessment processes embrace sustainability holistically (Wals, 2014), and more research and improvement is needed. According to Jones (2012), for example, "ticking simple check boxes [in sustainability assessment procedures] does not encourage rethinking current doctrines of progress and modernity in order to develop new visions of the world", nor do these procedures foster a better human-nature relationship, but merely follow "aspects of managerial efficiency and the logic of markets". Here again, sustainability science should ask universities to reflect on what type of development they wish to pursue and which underlying educational objectives are at stake. The scope of universities' holistic sustainability understanding determines what categories and indicators they will consider when making sustainability assessments.

In order for the research shift noted in Table I.3 to gain more momentum, other challenges such as the fragmentation of disciplines (Waas *et al.*, 2010) and discipline-specific procedures of quality assessment and research funding need to be addressed (Barth *et al.*, 2013a). However, there is a deep paradox in universities as institutions: Though directed towards teaching, they themselves learn very slowly and thereby delay changes from taking place (Stephens *et al.*, 2010).

Summing up, universities face tensions from strong economic and market forces, on national and global scales, and it is doubtful that any university can escape these influences. This discourse necessarily turns again to perceptions of sustainable

development, to underlying divergent worldviews and to the question of whether the main objective is to follow a “strong” or “weak” sustainable development paradigm (Baker, 2006; Neumayer, 2010). Waas *et al.* (2010) consider it “imperative that one distinguishes between trivial or less useful conceptualizations and useful ones”. Sustainability science and ESD are the scientific platforms to inform this choice.

Furthermore, they advance this ongoing debate by creating settings that permit the academic community to develop the new competencies, visions, and mental models necessary for a paradigm change. Such new settings are of central importance for the upcoming generation of scientists to experience inter- and transdisciplinary research approaches.

Jackson (2009) suggests a new paradigm without economic growth in which people “flourish as human beings – within the ecological limits of a finite planet” (p.16) and perceives as the most urgent task for society to create the conditions under which this flourishing is possible. The concept of degrowth emerged as an alternative to the neoliberal concept of infinite economic growth and has lately gained increasing attention in social media and research activities (Jackson, 2009; Schneider *et al.*, 2010; Research & Degrowth, 2013b; The New York Times' Room for Debate, 2013). This concept strives for downscaling of production and consumption, and at the same time, for increasing human well-being and enhancement of the ecological conditions, as well as equity on the planet. In order to achieve these goals, degrowth aims to develop strategies that help societies “to live within their ecological means, with open, localized economies and resources more equally distributed through new forms of democratic institutions” (Research & Degrowth, 2013a). These strategies aim to substitute efficiency with sufficiency and promote innovation that “will no longer focus on technology for technology’s sake but will concentrate on new social and technical arrangements that will enable us to live convivially and frugally” (*ibid.*). ESD and sustainability science as normative academic fields, action-oriented and close to society, together with universities as experimental areas, could include these strategies in their research agendas.

1.5 Concluding remarks

The fields of ESD and sustainability science form the scientific basis for research on sustainability in higher education and can be seen as a way for transition.

Despite some progress, for example in shifting sustainability research in universities closer to society and following more transformative approaches, especially with regard to competencies development, both fields are still a niche in the research landscape. However, they play a crucial role in opening up university research to more inter- and transdisciplinarity and to develop more appropriate approaches to tackle the complex sustainability challenges our world is facing.

As old mental models and reductionist perceptions of SD still prevail, these fields are of utmost importance to correct misconceptions and to follow a strong sustainability paradigm that opposes the neoliberal trends taking place globally in higher education. By providing new platforms and approaches, sustainability science and ESD foster a more open dialogue on visions and interpretations for SD and the development of new mental models. In this dialogue, more inter- and transdisciplinarity as well as critical thinking, systems thinking and anticipatory thinking are vital for the transition to sustainable universities and for enhancing the SD debate.

It is desirable that more disciplines than those related to environmental and educational science join this dialogue, like for example humanities, to enrich, diversify and enlarge the forms of communication that are urgently needed in the overall SD discourse.

ESD and sustainability science, along with universities as democratic institutions, constitute essential vehicles to investigate, test, and develop conditions for truly transformative change.

II. Participation in sustainability assessment tools

Implementing sustainability at the campus - Towards a better understanding of participation processes within sustainability initiatives

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Abstract

Participation is seen as a fundamental pre-requisite for the achievement of sustainable development. Applied to the university framework, participation refers to students' and faculty involvement giving the institutional community the opportunity to shape an institutional transformation process toward a more sustainable campus.

This ongoing research project intends to analyse how universities involve students and faculty in their efforts for campus sustainability and how these efforts are assessed. It aims to contribute towards a better understanding of the complexity inherent to sustainable development and participation processes used in higher education for promoting sustainability practices and for fostering citizenship and democratic values.

This paper presents the project's methodological approach, based on an intensive literature review about participation and sustainability assessment tools, with a focus on sustainability assessment tools that are applied in the higher education sector. Eleven of these tools, of which some use indicators, were selected, systemized and verified against the extent to which the participation of the campus community is captured and evaluated.

The results are used as a starting point for further discussion and research that shall lead to the development of an assessment tool for participatory approaches.

II.1 Introduction

Sustainable development (SD) and the question of how to overcome global challenges, such as climate change, social inequity, loss of biodiversity, overpopulation, and lack of resources to name but a few, are being discussed on highest international political level for about four decades. Within this debate, the education sector has been attributed a key role in promoting SD (UNEP, 1972; UNESCO, 1998).

Due to their high societal impact, universities have been challenged to take a leadership role in disseminating sustainability principles. Universities are seen as multipliers with ethical obligations to integrate systemically SD in their institutions and to provide best-practice-examples (Cortese, 2003; Čiegis *et al.*, 2006; Lozano, 2006a; Alshuwaikait *et al.*, 2008; Leal Filho, 2009) A growing number of higher education institutions have adopted declarations about Campus Sustainability (e.g. the Talloires Declaration, the Halifax Declaration and the (recently updated) Copernicus Charter). The current UN-Decade Education for Sustainable Development (2005-2014) has originated a vast number of projects related to SD in the tertiary education sector (UNESCO, 2010). A research team associated to the UNESCO chair Higher Education for Sustainable Development (Leuphana University of Lüneburg) recently published a proposal for an indicator set evaluating Education for Sustainable Development for the geographical regions Austria, Germany and Switzerland (Di Giulio *et al.*, 2011).

Agenda 21 stresses the importance of public participation as a “fundamental prerequisite for the achievement of sustainable development”(UNCED, 1992), as does the OECD’s governance strategy “Citizens as partners” (OECD, 2001) and the Aarhus Convention (UNECE, 2001). Furthermore, Agenda 21 gave the impulse to develop sustainability indicators (UNCED, 1992, Ch.40) in order to strengthen the implementation of SD, to be able to evaluate progress and to have a solid basis for decision-making.

Universities have started to recognize the use of assessment and reporting tools, as these tools constitute a helpful guideline towards SD implementation. They make policy and charter statements more operational by identifying best practice examples

and striving for continuous improvement (Shriberg, 2002). Furthermore, they enable a more effective communication about the complexity of sustainability. Several assessment tools, of which some are indicator-based, have been developed for universities to assess their sustainability performance, and carried out on their strengths and weaknesses (Shriberg, 2002; Cole, 2003; Chambers, 2009; Laroche, 2009; Fonseca *et al.*, 2011; Madeira *et al.*, 2011). The dimension of participation in these assessment tools, if included at all, is approached in different ways and there is a paucity of studies dealing with integrated approaches to SD involving faculty and students.

To narrow this gap, this ongoing research project focuses on campus sustainability, its assessment tools and on participation processes within sustainability initiatives in particular, with the final objective of developing a measurement tool for participation. The overall aim is thereby to contribute towards a better understanding of the complexity inherent to SD and the means of participation processes in higher education for promoting sustainability practices and for fostering citizenship and democratic values.

To achieve these objectives, at the initial stage of the research project, environmental management systems (EMS) were analysed as one group of assessment tools that have been adopted in many campuses around the world. That stage of the study examined whether the implementation followed a top-down or participatory approach and which activities were carried out in relation to the EMS on campus (Disterheft *et al.*, 2012b). Case studies showed that EMS can be used beyond operations ends and give opportunities for research and teaching embracing a participatory dimension (*ibid.*). The results of the study pointed to the necessity of deepening the research about the participatory dimension of campus sustainability and investigate further assessment tools. This paper constitutes a continuation of the previous research and focuses on the participatory dimensions within sustainability initiatives on campus and the related assessment procedures. Therefore, current practices were examined and led to the selection of eleven sustainability tools that have been used in the university context. Some emphasis was given to indicator-based

tools, since these allow to present condensed information in a more comprehensive and traceable way. These tools were analysed with respect to the applied measurement approach (Dalal-Clayton *et al.*, 2002) and the extent to which the participatory dimension of the campus community is captured. A preliminary evaluation is presented in order to gain a better overview and understanding of the current state of art and allows to draw some conclusions for the ongoing research.

Participatory approaches are in general considered to be positive, as they can increase acceptance, achieve consensus, enhance the understanding of SD and may result in a higher level of awareness that in turn may contribute to an overall improvement of institutional sustainability performance (Bass *et al.*, 1995). At the same time, participation has become a catch-all term with a multi-faceted use and different understandings depending on the context. A reflection about the term *participation* is given in the beginning and linked later to the field of assessment, since the underlying understanding of participation influences the choices for indicator's variables, and forms the basis for reflecting about the participatory dimension within existing sustainability tools.

II.2 Defining participation - a catch-all term

Promoting SD is closely linked to areas such as public participation and citizens' involvement. *Participation* and *empowerment* are two terms associated with the development of key competencies for SD. The first term refers to a continuous learning perspective, as pointed out by Howell *et al.* (1987): "Individuals must be provided with numerous opportunities throughout their lives to acquire the information and skills necessary to enact the citizen role". The second describes a multidimensional process of learning to think critically and to effect change in the personal life and in the community (Florin *et al.*, 1990). Particularly the latter aspect calls on citizens to be personally involved in decision-making processes (*ibid.*).

The important commitments on highest political level, as expressed in Agenda 21, the Aarhus Convention and the OECD-strategy, have strengthened participatory

approaches, but have also led to an inflationary use of the term *participation*: It has become a catch-all term and, similar to the term *sustainable development*, it appears that the same word is used but understood in different ways; a universal definition does not exist. Therefore, in order to be able to conduct an analysis of the participatory dimension within sustainability assessment tools it became necessary firstly to understand what participation means or can mean in its multifaceted use. This reflection helps to define criteria for assessment (“what to measure”) and to look for these criteria in existing assessment tools. From this reflection it is possible to follow to the question of “how to measure”, which provides an outlook to future steps of this ongoing research project. In order to help clarifying the different connotations around the term *participation*, the authors provide a brief resume of the theoretical context and the main streams of the current academic discussion.

II.2.1 Theoretical context

The recently concluded two and a half year project “Pathways through Participation”, carried out in the United Kingdom by the National Council of Voluntary Organization (NCVO), in cooperation with the Institute of Volunteering Research (IVR) and Involve², provides a useful summary of the huge amount of literature related to participation (Brodie *et al.*, 2009) and give insights into its complex dimensions from theoretical and practical perspectives. Below, some of the most important aspects connected to the research topic were identified.

Since participation is linked to the understanding of democracy and the relationship between citizens and state, democratic theories have served as an analytical tool to further develop the research in this field. The two most important strands are the theories of *representative democracy* and *participative democracy*. Both theories see “individual participation as essential to democratic governance and in creating legitimate institutions”, even though the relation between civil society and state is

² Involve is a charity-funded organization that carries out research in the field of public participation, <http://www.involve.org.uk/about/>

perceived differently in each strand (Keohane, 2002; Brodie *et al.*, 2009). Based on these theories, and influenced by the preoccupation about the 'democratic' deficit that many Western societies are confronted with (Smith, 2005), new forms of participation methods and techniques have emerged, like participatory budgeting, citizen's juries and partnership governance (Brodie *et al.*, 2009). In particular, participatory democracy with its demand for "involving the majority of people in decisions that affect their lives"(ibid.), is seen as an imperative way to revitalize the concept of democracy, to keep communities agile and public institutions accountable (Potter *et al.*, 1994; Roberts, 2004). Agenda 21 aligns with this view and requests integrating participation on all societal levels (UNCED, 1992; Ch.1, 28, 36 ff). The positive implications of this participatory approach seem to be evident and are not questioned in the literature, but some authors criticize the fact that the principles of participatory democracy fail to be translated into practice and miss the shift of existing power relationships (Brodie *et al.*, 2009).

Theories about civil society, social capital, social networks and movements can complement the understanding of representative and participatory democracy because they reflect on the power relationships between individuals, groups and wider society. Since the detailed discussion of these theories would exceed the scope of this paper, the authors selected only single aspects of the broad discussion that are considered important for the understanding of participation: (i) the provision of space for voices of different stakeholders to associate are a critical component of democracy (Dahl, 1989); (ii) joining and taking part in local organizations helps to foster trust in others and to develop a sense of values (Putnam, 1995); (iii) the presence or absence of public engagement impacts on the quality of governance, democratic institutions and public life (Stoker, 2004). Furthermore, these theories depict questions about social and socioeconomic inequality. Recent studies show e.g. a relation between social status (class) and the likelihood to engage (Brodie *et al.*, 2009). Social movement theories shift the emphasis from organizational to social networks, where individuals are no longer *members*, but *participants* who "have a sense of being involved in a collective endeavour" (ibid.). These movements are the place where personal

involvement, individual investment, new cultural modes, relationships and world views are experienced and shaped, and can be seen as a predictor for individual participation (della Porta *et al.*, 2006).

In this context, several authors reflect about the question of power, characterising power by its “public, hidden and insidious face” (Lukes, 1974, 2005 in Brodie *et al.*, 2009) and how these forms of power relate to the space for participation and the different levels (local to global) of power (Gaventa *et al.*, 2006). Understanding these dimensions of spaces, the levels and the forms of powers as “separate yet interrelated dimensions” permits to link them analytically together and to identify “obstacles and different entry points towards changing power balances in new forms of governance” (Gaventa *et al.*, 2006; Brodie *et al.*, 2009). Hereby, some light can be put on the circumstances why some people are routinely and perpetually excluded from some form of participation.

II.2.2 Levels, forms, typologies and scope of participation

In order to better differentiate multiple meanings of participation, it is useful to look at *levels*, *forms*, *typologies* and *scope*. The differences are explained in this section.

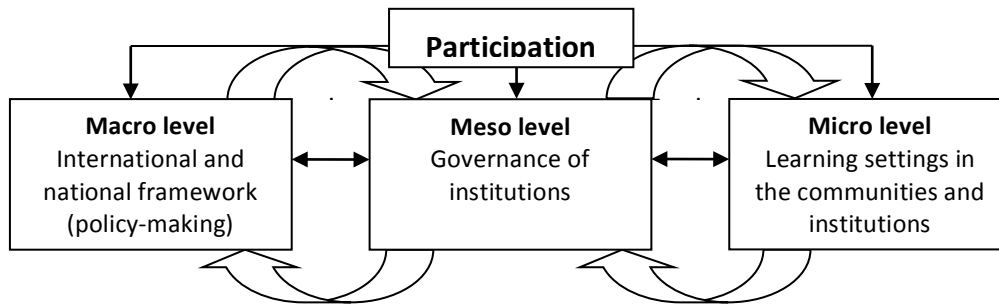
II.2.2.1 Societal levels

Participation has different connotations, depending on the societal level and can be looked at from different perspective. Due to the complexity of participation, it is helpful to have a clear picture of the societal level one refers to when speaking about participation, since each level deals with specific questions and problems.

Participation as requested in Agenda 21 refers to the macro, meso and micro level of society and references to the importance of participation can be found throughout the complete document. With regard to the educational sector, on the macro-level it is e.g. required that participation will be incorporated into the international and national framework of educational policy-making; on the meso-level institutions are challenged to embed the participatory dimension in their organizational structure and governance

model; and on the micro-level it refers to the concrete learning settings and spaces for participation provided in institutions and their communities (Figure II.1).

Figure II.1: Societal levels of participation



Source: (adapted from UNCED (1992))

Since participation is not a static concept, all levels are interconnected and influence each other, either in a top-down or a bottom-up process.

II.2.2.2 Forms and typologies

Another helpful distinction is to categorize participation by *public*, *social* or *individual* participation (Brodie *et al.*, 2009), albeit the boundaries often overlap.

A widely accepted perception of **public participation** is “the practice of consulting and involving members of the public in the agenda-setting, decision-making and policy-forming activities of organizations or institutions responsible for policy development” (Rowe *et al.*, 2004). It is also often referred as political or civil participation or participatory governance. **Social participation** can be understood as collective activities in which individuals are involved in on a regular basis. It is also referred as civil or community participation (Brodie *et al.*, 2009). **Individual participation** “covers the choices and actions individuals make as part of their life and that are statements of the society they want to live in (*ibid.*; Ginsborg, 2005).

Some features and characteristics are common to any type of participation (Brodie *et al.*, 2011): (i) it is voluntary and of free choice; (ii) it involves action; (iii) it can be collective or connected: even when the action is individual, a sense of common

purpose exists and the act itself has a collective impact or ambition; (iv) it is purposeful: all participants are concerned about doing something that is worthwhile in their own terms and every participatory act has, and is intended to have, consequences.

Another important aspect to consider when analysing participation are the underlying interests toward participation, as White (1996) alerts, because “if participation is to mean more than a façade of good intentions, it is vital to distinguish more clearly what these interests are”. In her study she distinguishes between *nominal*, *instrumental*, *representative* and *transformative* forms of participation (Table II.1). Even though her framework is based on experiences from the development policy field, it can be translated to other contexts as well, including the higher education sector, which is reflected in the examples given below.

Table II.1: Typologies of participation and underlying interests toward participation from a top-down and bottom-up perspective

Form / Type	Top-down (governmental / institutional perspective)	Bottom-up (participants’ perspective)	Function (What is the participation for?)
Nominal	Legitimation	Inclusion	Display
Instrumental	Efficiency	Cost	Means
Representative	Sustainability	Leverage	Voice
Transformative	Empowerment	Empowerment	Means / End

Source: adapted from White (1996)

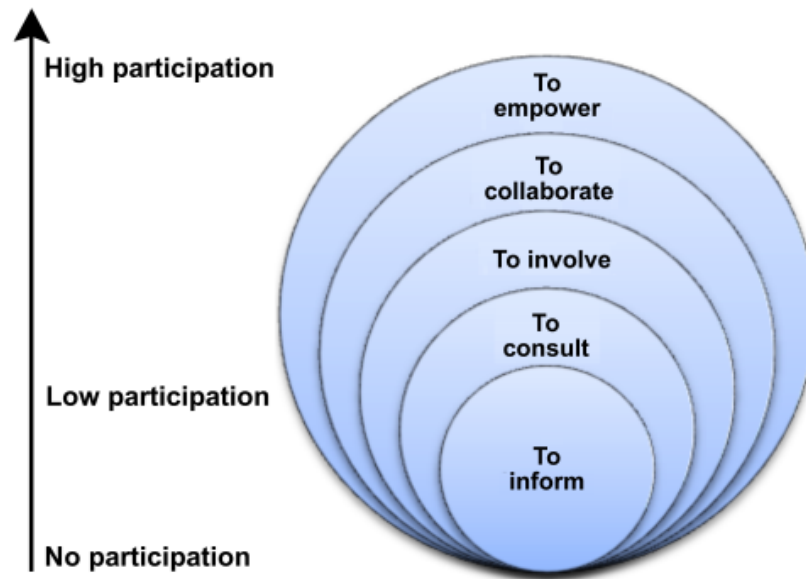
A **nominal form of participation** can seek e.g. *legitimation* for continuous funding of a project or programme (institutional perspective); the participants may see advantages of being part of a project or programme (*inclusion*) because they benefit e.g. from personal recognition or it can determine possibilities for personal future plans (e.g. financial loan, scholarships etc.), but the participation has merely a function of *display*. An **instrumental form of participation** may be based on the idea of cost-

effectiveness (*efficiency*) from the institutional perspective, e.g. people's participation as a necessary component to provide / establish services or facilities. From the participants' perspective this form of participation can be perceived as a *cost* (e.g. of time), and "its function is *a means* to achieve cost-effectiveness on the one hand, and a local facility on the other" (White, 1996). **Representative participation** aims to 'give a *voice*' to the people involved, and by doing so the executing party (government or institution) can develop better appropriate structures for a long-term perspective of a programme or project (*sustainability*), avoiding errors and misconceptions. For the participants, this form of participation allows *leverage* for a better recognition of their interests and needs. By a **transformative form of participation** *empowerment* is at the central focus of both, the institutional and the participants' perspective. Institutions might seek empowerment for several reasons, e.g. because of a general wish to improve performance or because of 'solidarity motivations' (e.g. with disadvantaged or disfavoured groups). Participants might perceive the positive impacts of empowerment when experiencing that their interests are taken into account. Participation becomes a means to empowerment and an end in itself. White (ibid.) stresses that empowerment will challenge existing power relations: "[governments and institutions] may find it rather uncomfortable when empowerment actually occurs" (ibid.). This author also makes clear that any participation process is dynamic as it is continuously influenced by a mix of interests (ibid.).

II.2.2.4 Scope

Subject of further analysis within the participation discussion are the scope and depth within participatory processes. A classification still relevant today was made by Arnstein (1969) who developed a "ladder of participation" moving from *non-participation* to *citizen control* by differentiating between scopes of participation. Based on her work, the International Association of Public Participation (IAP2) presents a spectrum in which public participation is divided into five levels (no participation to high participation): The level of participation and the public impact increase when activities or methods are directed towards involvement and empowerment (Figure II.2).

Figure II.2: Scope of participation related to the spectrum of participation



Source: adapted from International Association for Public Participation (2007)

This spectrum can overlap with the previously presented forms and typologies of participation, but it links in a very explicit way the *intention of actions* within participatory processes to the *outcomes* and offers a useful classification to analyse the scope of participation.

II.3 Sustainability assessment tools within the university context

The literature about sustainability assessment tools and about indicators in particular, is vast, giving evidence of the importance and necessity of this research field. As Meadows (1998) remarked in the early stages when those indicators were arising: “[...] the process of finding, implementing and improving sustainable development indicators will not be done right at first. Nevertheless, it is urgent to begin.”

Sustainability indicators are the measurable part of a system (*variables*) (Dalal-Clayton *et al.*, 2002) and allow to simplify, clarify and summarise, making the complexity of dynamic systems more transparent and understandable and are

therefore very useful for assisting in decision-making (United Nations, 2007; Singh *et al.*, 2009). Furthermore, they help to visualize phenomena, to highlight trends and to provide early warning to prevent economic, social and environmental setbacks (*ibid.*). Sustainability indicators differ from traditional indicators that usually are one-dimensional whereas SD indicators should go, for example beyond growth indicators, and report “about efficiency, sufficiency, equity and quality of life” (Meadows, 1998). They aim to capture the four dimensions of sustainable development, namely the economic, social, environmental and institutional dimension of SD in order to help the reflection of the overall concept of SD (United Nations, 2007; Singh *et al.*, 2009). A large variety of indicators’ lists exist, aggregated in form of *indices*, which differ in the particular selection of ‘representative’ indicators of the four dimensions of SD and the related sustainability concerns (Bartelmus, 2008).

On the international level, and following the requirement of Chapter 40 in Agenda 21, the UN Commission for Sustainable Development (CSD) initiated SD indicators after the Earth Summit in Rio de Janeiro (1992). They were developed during a five years period (1994-2001) and have been applied, tested and revised since then, and became known as the *CSD-indicators* (United Nations, 2007). Other international well-known indices are, e.g. the *Index of sustainable and economic welfare* or the *Human Development Index*. A useful overview about the main international SD indicators and indices offers Sing *et al.* (2009).

Not all sustainability assessment tools use or are based on indicators. Approaches to measurement can be divided into (1) accounts, (2) narrative assessments; (3) indicator-based; however, assessment tools can combine several of these approaches (Dalal-Clayton *et al.*, 2002; Lozano, 2006b). *Accounts* mean that raw data are constructed and converted into a common unit, e.g. monetary, area or energy, like used within the Ecological Footprint. *Narrative assessments* combine text, maps, graphics and tabular data, using sometimes indicators, but these are not a corner stone. The World Development Report can be considered as one example of this approach. The *indicator-based approach* includes as well texts, maps, graphics and tabular data, similar to the narrative assessments, but group them around indicators.

The well-being assessment or the Dashboard of Sustainability are examples for an indicator-based approach (ibid.). Dalal-Clayton *et al.* (2002) attribute different strengths and weaknesses to each approach by classifying them for their potential towards (a) transparency, (b) consistency, (c) participation, and (d) usefulness for decision-making (Table II.2). These criteria are based on the groundbreaking Bellagio Principles (Hardi *et al.*, 1997).

Table II.2: Types of Measurement approach and their potential

Measurement approach	<i>Accounts</i>	<i>Narrative</i>	<i>Indicator-based</i>
<i>Potential for Transparency</i>	Low	Medium	High
<i>Potential for Consistency</i>	High	Low	high
<i>Potential for Participation</i>	Low	High	medium
<i>Usefulness for decision-making</i>	Medium	Medium	high

Source: adapted from (Dalal-Clayton *et al.*, 2002)

Participation in this context refers to the potential scope of engagement of non-experts; Dalal-Clayton *et al.* (2002) specify: “[...] the more technical the method, the less scope of participation”.

For the higher education sector, Orr ((2000) in Shriberg, 2002) proposes that an ideal campus SD assessment tool should address the following questions: (1) What is the consumption of material goods on a per capita basis; (2) What are the universities policies regarding operational management (waste, recycling, purchase, energy and building); (3) Does the curriculum strengthen the development of ecological literacy; (4) Does the outreach of a university support financially the creation of sustainable regional economies?; (5) “What do the graduates do in the world?” This list, even though including a broad range of topics and an intergenerational outlook (students’ activities in the future) of extreme importance, excludes several aspects of the social dimension of SD and focuses more on the institutional impacts towards the environment and economy. In contrast, Lozano (2006b) bases his criteria for an ideal

assessment tool on the different parts of a university system (Cortese, 2003), and argues that sustainability indicators should cover systemically (i) Education, (ii) Research, (iii) Campus Operations, (iv) Community outreach, (v) assessment and reporting. Shriberg (2002) considers as essential “to identify issues with broad effects and influences“, to move beyond eco-efficiency, to measure processes and motivations and to include a large range of stakeholders. These different approaches demonstrate the complex and difficult task to define *what to measure* when assessing campus sustainability.

Over the past twenty years, several authors have dedicated their studies to measuring sustainability in higher education institutions, using in some cases also indicator-based tools (Roorda, 2001; Lozano, 2006b; Rode *et al.*, 2008; Chambers, 2009; Laroche, 2009; Brinkhurst *et al.*, 2011; Lozano, 2011). Some assessment tools were developed exclusively for universities, trying to give an answer not only to the question *what* to measure but also to the question *how* to measure. These tools are e.g. the *Audit Instrument for Sustainability in Higher Education (AISHE)* (Roorda, 2001), the *CSAF – Campus Sustainability Assessment Framework* (Cole, 2003; Sierra Youth Coalition, 2012), the *Graphical Assessment of Sustainability in Universities (GASU)* (Lozano, 2006b), *STARS – Sustainability Tracking Assessment & Rating System* (Association for the Advancement of Sustainability in Higher Education (AASHE, 2014b, 2015), *STAUNCH – Auditing University Curricula in Higher Education* (Lozano, 2010), the *Sustainability Report Card* (Sustainable Endowments Institute, 2011). Other tools, such as the ecological footprint, GRI – Global Reporting Initiative Guidelines, international environmental standards like ISO 14001, EMAS or the social responsibility standard ISO 26000, have been adapted to the higher education context and are meanwhile successfully implemented at many universities (Disterheft *et al.*, 2012b).

These tools have been assessed in terms of their strengths and weaknesses (Shriberg, 2002; Cole, 2003; Laroche, 2009, Yarime *et al.*, 2012a), and some were evaluated in case studies on specific campuses (see Glover *et al.* (2011) for STAUNCH; Beringer (2006) for CSAF; Flint (2001) and Venetoulis (2001) for the ecological footprint; Disterheft *et al.* (2012b) for case study examples of Environmental

Management Systems at European Campuses). Furthermore, a still small but increasing number of higher education institutions use Sustainability Reports, of which some follow the Global Reporting Initiative Guidelines (GRI) (Lozano, 2011; Ceuleman *et al.*, 2014; Disterheft *et al.*, 2012b).

II.4 Methodological approach

For the first time, the dimensions of participation and their assessment are analysed within sustainability initiatives in higher education institutions and compared with existing assessment tools.

This research is based on an exhaustive literature review about participation and sustainability assessment tools. Starting from Shriberg's (2002) and Cole's (2003) reviews about sustainability assessment procedures within Higher Education Institutions, the list was updated to the current state-of-art, including some international standards (two ISO standards and EMAS). Then, eleven assessment tools that have been used in higher education institutions were selected, based on their complexity, timeliness and accessibility. These tools were systemized following Dalal-Clayton *et al.*'s (2002) categorization of measuring approaches (Table II.2). Based on the literature review about participation (II.2) the authors formulated preliminary criteria for the assessment of the participatory dimensions and analysed how participation is reported in the selected campus sustainability assessment tools. The criteria for this analysis were: (i) participation possibilities are assessed (yes/no); (ii) participation possibilities are differentiated by subgroups (students, faculty, staff, external community); (iii) the assessment of participation possibilities is either quantitative or process-oriented (or combined); (iv) Differentiation between participation forms are made (yes/no), and if affirmative, (v) which differentiation between forms of participation are made; (vi) participation processes themselves are assessed (yes/no).

II.5 Results

A large number of universities have opted for different tools to assess sustainability on campus. In the USA and Canada, many campuses use CSAF, STARS or the Sustainability Report Card, whereas in Europe an increasing number of universities publish sustainability reports, following the GRI-Guidelines. Table II.3 shows a very brief characterization of the tools that were selected for the present analysis.

Table II.3: Characteristics of assessment tools applied in higher education institutions

Assessment tool	Characteristics
AISHE – Auditing Instrument for Sustainability in Higher Education	An instrument developed for the managerial board/ administrative experts as well as for education experts (faculty) and students, based on a model for quality management and using the Plan-Do-Check-Act-Cycle to assess up to which level sustainability principles are incorporated into the curriculum (education) and institution (operations) (Roorda, 2001)
CSAF – Campus Sustainability Assessment Framework	An academically developed standardized audit tool for the Canadian university landscape. It uses 169 indicators in total to report on the “eco-system” (air, water, land, energy, material) and on the “people-system” (community, governance, knowledge, health & well-being, economy & well-being) (Cole, 2003; Beringer, 2006)
GASU® – Graphical Assessment of Sustainability in Universities tool	Adds the dimension of education and research to the GRI- Global Reporting Initiative Guidelines. Consists of charts where the user can grade a list of indicators referring to the different dimensions of sustainability. The tool allows benchmarking over time and comparison with other institutions (Lozano, 2006b)
STARS – Sustainability Tracking, Assessment & Rating System	Developed by the Association of the Advancement of Sustainability in Higher Education (AASHE), this tool uses indicators, based on the environmental, economical and social dimension of SD and divides these into four categories related to campus activities, such as Education & Research, Operations, Planning, Administration & Engagement, Innovation (Association for the Advancement of Sustainability in Higher Education (AASHE, 2014b, 2015). Applied mainly in US and Canadian universities, but an international pilot project has started as well.
STAUNCH® – Sustainability tool for Auditing Universities Curricula in Higher Education	This tool audits universities’ curricula holistically by applying a two-tiered balance of SD. Based on four main aspects this tool calculates numerically the balances and strength of the curricula, providing a snapshot of how SD is addressed by the institution (Lozano, 2010).

(Table II.3 continued)

Assessment tool	Characteristics
Sustainability Report Card	A survey based instrument, meanwhile merged into STARS, that previously was used to send surveys to administrators and students' leaders to collect data for 52 indicators about campus operations, dining services, endowment investment practices and student activities. It was carried out by the non-profit Sustainable Endowments Institute and universities signed up to participate in the annual report (Sustainable Endowments Institute, 2011).
Ecological Footprint	Measures how much land and water area a human individual or population requires to produce the resources it consumes and to absorb its carbon dioxide emissions. Developed in 1990 by Wackernagel and Rees and meanwhile adopted scientifically with differences in its applications (Global Footprint Network, 2012)
EMAS – Eco-Management and Audit Scheme	Standardized management tool developed by the European Commission for companies and other organizations to evaluate, report and improve their environmental performance. It requires clear and quantified goals as well as a verified environmental declaration to obtain a final certification (European Commission, 2010). As an environmental management systems it derives from quality management systems and follows the Plan-Do-Check-Act-cycle
ISO 14001 (International standardisation Organisation)	Most well-known and internationally recognized environmental standard; can be implemented with or without a final certification. Derives as well from quality management systems and is based on the Plan-Do-Check-Act-Cycle (ISO, 2011b).
ISO 26000 (International standardisation Organisation)	An assistant tool to incorporate social responsibility and to go beyond legal compliance with regard to sustainability issues. It offers guidance, but is not standardized nor does it offer certification (ISO, 2011a)
GRI - Global Reporting Initiative Guidelines	Provide guidelines to companies and organization to report about their sustainability performance. They are structured in five sections (vision and strategy, organization's profile, governance structure, GRI content index, performance indicators). They have been developed by a non-profit organisation and aim to promote a long-term stakeholders' dialogue (Global Reporting Initiative, 2012)

Six of the selected assessment tools were specifically developed for the higher education context; five originate from models for corporations and organizations, but have been used in universities as well (Table II.4). The majority of the assessment tools are indicator-based, only two (AISHE and ISO 26000) follow a narrative assessment approach. With regard to the subsystems relevant for higher education institutions, namely the economic, educational, environmental, institutional and social dimensions, only three tools – CSAF, GASU and STARS, report on all subsystems. When attributing the respective potential for transparency, consistency, participation and usefulness for

decision-making, the authors followed closely Dalal-Clayton *et al.* (2002) scheme (Table II.2), but these classifications should be interpreted as an indicative reference and may vary from situation to situation.

Table II.4: Measurement approaches of sustainability indicators used in Higher Education Institutions

Assessment tool	Context ^a	scope of subsystems					Measuring approach				
		environmental	economical	social	institutional	educational	Acc / Narr / Ind ^b	potential for transparency	potential for consistency	potential for participation	usefulness for decision-making
AISHE	HEI	-	-	x	x	x	Narr	medium	low	high	medium
CSAF	HEI	x	x	x	x	x	Ind	high	high	medium	high
GASU®	HEI	x	x	x	x	x	Ind	high	high	low	medium
STARS	HEI	x	x	x	x	x	Acc/Ind	high	high	medium	high
STAUNCH®	HEI	-	-	-	x	x	Ind	high	high	medium	high
Sustainability Report Card	HEI	x	x	x	x	-	Narr/Ind	high	medium	medium	high
Ecological Footprint	ORG	x	-	x	-	-	Acc/Ind	Medium	high	low	medium
EMAS	ORG	x	x	x	x	-	Acc/Ind	medium	high	high	high
ISO 14001	ORG	x	-	-	x	-	Acc/Ind	medium	high	low	high
ISO 26000	ORG	x	-	x	x	-	Narr	medium	low	high	medium
GRI	ORG	x	x	x	x	-	Acc/Ind	high	high	medium	high

(a) HEI = Higher Education Institutions; ORG = Organisations

(b) Acc = Accounts; Ind= Indicator-based; Narr = Narrative assessment

As explained before, the category for *potential for participation* (Dalal-Clayton *et al.*, 2002) refers to the involvement of the public (non-experts) within the measurement process. In this paper, *participation possibilities* refer to the *space* (in a non-physical sense) given by the institution to its community in order that participation can *take place*. Table II.5 shows how the dimensions of participation according to the methodological approach used in this paper are captured in the selected tools. The subgroups of the academic community, namely students, faculty, staff and external

community, are distinguished. Often, the term faculty can comprise teaching staff and administrative staff at the same time; cases without a clear differentiation were classified as “not defined”. Only AISHE and GASU distinguish clearly between all four subgroups and report about different forms of participation. The Sustainability Report Card differentiates between students, staff and faculty, and different forms of participation, but does not include the external community. STARS and CSAF do not define explicitly the subgroup “staff”, but differentiate as well between forms of participation, like volunteerism, community-service, voter-turnout and partnerships on local level (with businesses, NGOs, etc.); however, a focus on students’ involvement can be recognized. Among the tools designed for companies, EMAS and GRI include reporting about different forms of participation that are based on a stakeholders’ dialogue. ISO 26000 constitutes a particular case, since it is not a management system with concrete requirements, but is more understood as a ‘guideline’. The participatory dimension is, strictly speaking, not assessed, but was included it in this evaluation because of its high potential for participation within the stakeholders’ dialogue as well as its increasing popularity (Pojasek, 2011).

With the exception of AISHE, none of the tools considers the assessment of the participatory processes themselves.

Table II.5: Dimensions of participation within sustainability assessment tools used in Higher Education Institutions

Assessment tool	Dimensions of participation							assessment of participatory processes	
	participation assessed (x=yes; -=no)	includes students	includes faculty members	includes staff	Includes external community	quantitative oriented	process-oriented		Differentiation between forms of participation how?
AISHE	x	x	x	x	x	-	x	Interactive learning methods for the academic community (not students-focused)	x
CSAF	x	x	x	n.d.	x	x	-	Volunteerism, voter turnout, community engagement within policy-making	-
GASU®	x	x	x.	x.	x	x	-	Report about capacity building, course "Educate the educators in SD", research related to SD, partnerships on local level	-
STARS	x	x	x	n.d.	x	x	-	Co- curricular education, volunteerism and community service, partnerships on local level	-
STAUNCH®	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sustainability Report Card	x	x	x	x	x	x	-	Employee outreach opportunities, different forms of students involvement	-
Ecological Footprint	-	n/a	n/a	n/a	n/a	x	-	n/a	n/a
EMAS	x	n/a	n/a	n/a	n.d.	x	x	Differentiation between top-down and bottom-up governance, stakeholders engagement in diverse forms	-
ISO 14001	-	n/a	n/a	n/a	-	x	x	n/a	n/a
ISO 26000	x.	n/a	n/a	n/a	x	x	x	Stakeholders' engagement	n/a
GRI	x	n/a	n/a	n/a	x	x	x	Differentiation between top-down and bottom-up governance, stakeholders engagement in diverse forms	n.d.

n/a= not applicable; n.d.= not defined

II.6 Discussion – How can campus sustainability assessment tools contribute to a better understanding of participation?

It is largely agreed that participatory processes are indispensable for promoting sustainable development, as requested in Agenda 21 and again underlined in the UN Decade Education for Sustainable Development (2005-2014). In most of the assessment tools analysed above, participation is addressed in a certain way, but with different foci, e.g. on community engagement, volunteerism, stakeholder dialogues or voter-turnout. It remains unclear to which extent the entire internal community as well as the external community are considered, how effective the different participation options and processes are and what their impact is with regard to institutional, academic, professional and personal life.

The multi-faceted use of the term, blurred boundaries between individual, social and public participation as well as an unclear differentiation between participation at macro-, meso- or micro-levels can turn the assessment of participation into a very challenging task. But since assessment tools, and in particular indicator-based approaches, allow making complex and dynamic processes more comprehensible, they can be a supporting tool for making the participatory dimensions more transparent and tangible. Assessment tools are linked to values, because, according to Meadows (1998), “we measure what we care about and we care about what we measure”. Considering the participatory dimension in a more integral way would demonstrate its significance to the university’s community and could lead at the same time to an improvement of participation processes.

In her recent study, Brinkhurst *et al.* (2011) point out that faculty and staff members are important leaders to achieve lasting progress towards campus sustainability, but that their support is often overlooked and not sufficiently recognized. An assessment tool that looks on the participation of the entire community could help to reduce this imbalance. Dahl (2012) defends the inclusion of ethics and values into assessment tools, because “building awareness of values is an important part of the process of change towards sustainability”. As a gap of current

sustainability indicator sets he identifies the lack of an indicator “to evaluate individual action or commitment” (ibid), because “sustainability (or the lack of it) depends on the individual actions of over 6 billion human beings, the choices they can and do make, the lifestyles they adopt, and their decisions on family size, consumption patterns, etc., recognizing that poverty greatly limits choice” (ibid). An assessment tool for participation, in the specific context of a higher education institution, might help visualize the impacts of individual, social and public participation. This would improve not only the institutional performance, but also contribute to increase sustainable practices among the internal and external universities’ communities’ members, foster citizenship and democratic values and to build a sustainable development for the current and future generations.

II.7 Conclusion

Participation, considered to be essential within the efforts to create sustainable universities, has become a buzzword with different meanings to its users. In the present analysis of eleven assessment tools applied in universities, the authors could verify that participation was approached in distinct ways, and even though assessed in most tools, the perception of the dimensions of participation was limited. Only two tools, namely AISHE and GASU, differentiate between the subgroups of the internal academic community (students, faculty and staff) as well as the external community. All tools that have been developed for the university context distinguish between different forms of participation, such as volunteerism, community-engagement and voter-turnout, but put a focus on students’ involvement. The participatory processes themselves are not assessed, with exception to AISHE, and therefore it is very difficult to evaluate the effectiveness of any of the participation forms.

The results, even though still preliminary, show a gap and the need for a broader consideration of the dimensions of participation. This paper can therefore form a starting-point for further discussion and reflection to develop a measurement tool for participatory processes within campus sustainability initiatives.

III. Empirical Studies

Sustainable universities - A study of critical success factors for participatory approaches

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Abstract

Participatory approaches can be seen as a requirement, but also as a benefit to the overall paradigm change towards sustainable development and contribute towards the integration of the sustainability concept into the university culture. So far, there have been comparatively few research studies on participation within sustainability implementation at university level, and a more differentiated understanding of these processes is still missing, both in the practice of conducting a participatory process and in the sustainability assessment. This paper addresses some of the failures and successes experienced within participatory approaches in campus sustainability initiatives, and deduces a set of critical success factors and emergent clusters that can help to integrate the dimensions of participation more inclusively into sustainability assessment. Following a qualitative approach and inspired by the Delphi-method, semi-structured expert interviews (N=15) and four focus group discussions (N=36), with participants coming from twenty different countries in total, were conducted and compared according to qualitative content analysis. Findings give empirical evidence to some of the characteristics related to stakeholder engagement, and associate higher education for sustainable development to empowerment and capacity building, shifting away from a previous focus on environmental sustainability. The success of participatory approaches is interdependent with structural institutional conditions and the persons engaged, highlighting the importance of specific skills and participatory competencies. A better integration of the dimensions of participation into

sustainability assessment practices can help in defining and establishing participatory approaches on institutional level and fostering a culture of participation in the transition to sustainable universities.

III.1 Introduction

Participation is seen as pre-requisite for achieving sustainable development (SD), as officially acknowledged in Agenda 21 (UNCED, 1992). It is one of the buzzwords that has entered the sustainability discourse (Stakeholder Forum, 2012), but lacks a more differentiated use and application (Cornwall, 2008). Universities, seen as key players in the promotion of SD (Cortese, 2003; Lozano, 2006a; Leal Filho, 2011, Sterling *et al.*, 2013) are making advancements in SD implementation (e.g. in terms of campus greening, curriculum renewal and research orientations) and follow a manifold variety of implementation strategies (Brinkhurst *et al.*, 2011; Barth, 2013; Mader, 2013, Saadatian, 2009), of which some include also participatory approaches (Disterheft *et al.*, 2012b).

At the same time, within the overall SD debate, a high emphasis is being given to assessments as well as to the development of SD indicators, in order to monitor progress, to identify strength and weaknesses, to correct deficits and prevent unwanted effects. Universities apply different types of assessment tools in order to assess their sustainability performance: for example, standardised and non-standardised instruments (such as environmental management systems and ISO products, or internal audits and reports, respectively) and also an elevated number of university-specific assessment tools (Roorda, 2001; Beringer, 2006; Lozano, 2006b, 2010; Glover *et al.*, 2011; AASHE, 2014b). Nevertheless, the dimensions of participation, referring to the active engagement of students, faculty, non-teaching staff and relevant external stakeholders, are less considered in sustainability assessment practices and show reduced perceptions of participation (Disterheft *et al.*, 2012a, Saadatian *et al.*, 2012). Furthermore, there is still a focus on environmental sustainability, and more holistic approaches are necessary to achieve the proclaimed

paradigm change towards sustainable universities (Alshuwaikait *et al.*, 2008; Ferrer-Balas *et al.*, 2009; Lozano *et al.*, 2013a).

Participatory approaches can be seen as a requirement, but also as a benefit to the overall paradigm change towards SD and contribute towards the integration of SD into the university culture. So far, there have been comparatively few research studies on participation within sustainability implementation at university level, and a more differentiated understanding of these processes is still missing, both in practice of conducting a participatory process as well as in the sustainability assessment.

Most research related to participation is done outside of the university context and focuses on environmental planning (Bass *et al.*, 1995; Reed, 2008), rural and community development (Lowe *et al.*, 1998; Fraser *et al.*, 2006; Thabrew *et al.*, 2009), volunteering (Lozano, 2012) or policy-making on local and regional level (Macnaghten *et al.*, 1997; Singleton, 2000). But higher education institutions (HEIs) have particular characteristics and dynamics (Adomssent *et al.*, 2007) and are required to develop a specific research agenda targeting sustainable universities (Stephens *et al.*, 2010; Waas *et al.*, 2010), for which reason it becomes necessary to explore in more depth what participation can mean in the university context. In doing so, the complex challenges inherent to participation and sustainability implementation can be better understood, and knowledge can be adapted to the specific needs of sustainability practitioners in HEIs, who execute and assess these processes.

Consistent with this thinking, the objective of this ongoing, mixed-methods study is to investigate participatory processes in university sustainability initiatives, with the final purpose to develop assessment criteria and a tool for a better integration of the dimensions of participation into sustainability assessment related practices in HEIs. The relevance of this work is based on the fact that empirical knowledge in this field is still scarce and practical advice yet to be adapted to the university context.

The specific objective of this paper is to analyse the opinions and experiences of sustainability practitioners, in order to identify critical success factors (CSF) for an effective participation of the academic community in the transition towards

sustainable universities. It focuses on both, failures and successes experienced in participatory sustainability initiatives, from which a set of CSF is deduced and examined for relationships and patterns, preparing therefore the way for a more inclusive assessment of these processes.

III.2 Theoretical framework

The theoretical framework of this study comprises broad areas related to social theories. A focus is set on theories of democracy, in particular on questions about participation, governance and stakeholder engagement (II.2.1). These questions are linked to the educational concept of Education for Sustainable Development (ESD), for this study applied to the university context (II.2.2).

III.2.1 Participation, governance and stakeholder engagement

Participation is associated to the understanding of democracy and the relationship between citizens and state, being the theories of *representative democracy* and *participative democracy* the two most important strands in democratic theories. Both theories consider participation as essential to democratic governance and in forming legitimate institutions, even though the relation between civil society and state is perceived differently in each strand (Keohane, 2002; Brodie *et al.*, 2009).

Based on these theories, and influenced by the preoccupation about the 'democratic' deficit that many Western societies are confronted with (Smith, 2005), new forms of participation methods and techniques have emerged, often related to *public participation* like participatory budgeting, citizen's juries and partnership governance (Fung *et al.*, 2001; Fung, 2006; Cornwall, 2008). Public participation refers to the practice of consulting and involving members of the public into agenda settings, decision- and policy making of organisations or institutions (Rowe *et al.*, 2004) which is nowadays also associated with stakeholder engagement (Blomgren Bingham *et al.*, 2005), often based on Freeman's (1984) stakeholders approach. Other forms of participation are *individual* and *social participation*: the first category refers to individual choices and actions as a statement for a society one would like to live in (e.g.

voting, but also individual consumer attitudes and options of life styles), the second relates to collective activities one is engaged in on a regular basis, e.g. in one's community (Cornwall, 2008; Brodie *et al.*, 2009).

In practice, the boundaries of different participation forms are blurred and can be found sometimes all together in a single project or process (*ibid.*). The literature distinguishes also different levels of participation, referring to distinct degrees of citizen power (Arnstein, 1969) and scopes of participation, depending on whether the objectives of participation target merely to inform or consult the public or whether it is intended to empower the participants (International Association for Public Participation, 2007). White (1996) sets the focus on underlying interests of participation and identifies *normative, instrumental, representative* and *transformative* types of participation.

In particular, participatory democracy is seen as an imperative way to revitalize the concept of democracy, to keep communities agile and public institutions accountable (Potter *et al.*, 1994; Roberts, 2004). Agenda 21 enforces this approach by requesting to integrate participation on all societal as a sustainability principle and attributes a notably role of importance to education, including educational institutions such as universities (UNCED, 1992, Ch. 36). This integration has consequently impacts on governance structures and stakeholder engagement (Hemmati, 2002; Shattock, 2002), and urges HEIs to implement "a new mode of governing that is distinct from the hierarchical control model, [following] a more cooperative mode" (Enders, 2004, p. 379).

Stakeholder groups of HEIs can be classified by internal / external, individual / collective, academic / non-academic stakeholders, being faculty, staff and students, but as well the government or other substantial supporters the main stakeholders (Jongbloed *et al.*, 2008). The selection of relevant stakeholders should be executed carefully (*ibid.*, Reed *et al.*, 2009), as stakeholder engagement bears risks and advantages at the same time. Risks, for example, can be stakeholders lacking skills and resources (like time) to engage in a meaningful level, or self-interest and instrumentality on the part of the institution, or an overall lack of fundamental

agreement and common objective about what is actually required for sustainability at a systems level (Collins *et al.*, 2005). Advantages, on the other hand, can be seen in (i) capturing knowledge, (ii) increasing ownership, (iii) reducing conflict, (iv) encouraging innovation (*management perspective*); or in (v) inclusive decision-making, (vi) promotion of equity and (vii) building of social capital (*ethical perspective*); as well as (viii) more dialogue, (ix) reflection of own values and attitudes and (x) development of shared visions and objectives (*social learning perspective*) (Narain Mathur *et al.*, 2008). Reed (2008) concludes that participatory processes need to be institutionalised in order to develop an organisational culture "that can facilitate processes where goals are negotiated and outcomes are necessarily uncertain" (p. 2426), and that participation approaches are worthwhile to be tried despite the risks they bear.

Linked to the key role universities have been attributed to in the promotion of SD principles, stakeholder engagement is therefore of particular importance for HEIs with regard to the educational and institutional dimension.

III.2.2 Higher Education for Sustainable Development (HESD)

The debate about sustainable development has also initiated the debate about an educational concept that would help to achieve the goals of sustainability: Education for Sustainable Development (ESD), usually called HESD when referring explicitly to the university context. Being integrated in Agenda 21, it has been a field for international educational policy-making since the beginning of the SD debate. The concept follows a transformative approach to education, led by a learning process that is based on the principles of sustainability and directed towards the objectives of empowerment and critical thinking (UNESCO, 2011; Barth *et al.*, 2013a). Diverse methodological and philosophical perspectives coexist, but there is a consensus about the normativity of this concept and the orientation towards action for sustainability (McKeown *et al.*, 2006; Vare *et al.*, 2007).

The research focus, previously put on environmental sustainability, has shifted more recently to articles on pedagogy, competencies, community outreach and partnerships (Barth *et al.*, 2013b; Wals, 2014). Among these topics, the debate about

competencies has gained particular visibility where the overall need for more inter- and transdisciplinarity, systems thinking, anticipatory thinking and critical thinking are highlighted (de Haan, 2006; Barth *et al.*, 2007; Mochizuki *et al.*, 2010; Wiek *et al.*, 2011; Rieckmann, 2012). Scholars debate about specific ESD competencies that can refer both to learners (competencies that should be developed when engaging in ESD) and to teaching persons, i.e. the person who facilitates ESD (Wals, 2010; 2014). It is differentiated between a built-on and a built-in approach: Whereas the first builds on extra sustainability courses and programmes for sustainability literacy improvement, the second fosters an integration of sustainability in all courses and research, and underlines the necessity of curricula renewal, new learning methods and reorientation in teaching. Specific ESD teacher training programmes exist (e.g. Barth *et al.*, 2012), but are yet to be spread more broadly among HEIs.

Assessment tools have been developed within the evaluation process of the UN Decade Education for Sustainable Development (2005-2014), and offer some general ESD indicators (e.g. Reid *et al.*, 2006; Podger *et al.*, 2010; Di Giulio *et al.*, 2011). There are also indicators for social learning within sustainability networks (Dlouhá *et al.*, 2013), but none of these efforts are university-specific, and participatory approaches are less explicitly covered. Scholars call for more research in these fields (Mader, 2013; Wals, 2014).

ESD in universities is therefore a field for enlarging the dialogue about SD and for the development of new mental models. It is consequently intertwined with the ideas about participation and governance and contributes in particular to the ethical and social learning perspectives of stakeholder engagement.

III.3 Methods

Inspired by the Delphi-method (Linstone *et al.*, 2002), the data collection was divided into two consecutive phases, consisting, first, of expert interviews (N=15) and, second, of focus group discussions (four groups, N=36). In addition to the research questions targeting CSF for participatory processes in campus sustainability initiatives,

a further research question directed towards experiences with sustainability assessment tools was part of both data collections, but is not subject of this paper.

III.3.1 First data collection: semi-structured expert interviews

For the first data collection, a semi-structured interview method was chosen to obtain rich and varied data (Bryman, 2012) that would allow to compare different cases of sustainability initiatives involving different stakeholder groups and to identify a list of critical success factors of participatory approaches. Experts, like sustainability coordinators, professors and students engaged in activities directed towards the transition to more sustainable universities, were considered to be the most appropriate sample group as they pursue relevant experience in the field. The selection followed a convenience sampling, as the interviews were supposed to be carried out mainly during an academic conference, but contacts were established previously by e-mail and based on the requirement of a minimum of 2 years working experience in campus sustainability. Fifteen selected experts in sustainability implementation at university level, from diverse academic backgrounds and nationalities (Table III.1), were interviewed, using mostly open-ended questions about experienced failures and successes with participatory approaches in sustainability implementation (see appendix A1-A9 for the materials used, e.g. interview guide). The questions strived for rich narratives that would allow deducing CSF. One closed question was geared to the personal classification of the respective participatory processes on a scale from 0 to 5, being 0 not successful at all and 5 very successful, and was used as a contextualization for further open-ended follow-up questions to explore the most and least successful aspects and possible underlying factors. A second part of the interview dealt with sustainability assessment tools and the interviewee's experience with them, exploring whether and how participation is or can be better included. The interviews, of 20-60 min. length per interview, were conducted during the *World Symposium Sustainable Development in Universities 2012*, a side event of the UN Earth Summit Rio+20, as well as in Portuguese and German universities during 2012 and 2013. The interviews were audio recorded, transcribed, anonymised and

coded, following a qualitative content analysis approach (Mayring, 2000, 2010), with the support of qualitative data analysis software NVivo 10.

Table III.1: Participants' profile of first data collection through semi-structured expert interviews

#	Nationality	Age	Gender*	Profession	Level of education	Working in sustainability (average in years)
#1	Australian	30-39	f	Lecturer	PhD	10
#2	British	50-59	f	Sustainability Coordinator	PhD	15
#3	British	40-49	m	Lecturer	MSc	13
#4	Finnish	30-39	f	Sustainability Coordinator	MSc	13
#5	Finnish	40-49	f	Sustainability Coordinator	MSc	14
#6	German	30-39	m	Post-doc fellow	PhD	3
#7	German	30-39	m	Post-doc fellow	PhD	2
#8	Portuguese	40-49	f	Professor	PhD	15
#9	Portuguese	60-69	f	Professor	PhD	25
#10	Russian	30-39	f	Researcher	PhD	10
#11	Swedish	60-69	f	Professor	PhD	20
#12	US-American	20-29	f	Sustainability Coordinator	BSc	5
#13	US- American	20-29	f	Student	BSc	3
#14	US-American	30-39	m	Lecturer	PhD	15
#15	US-American	40-49	m	Professor	PhD	25
15	<i>total N (10 =f, 5= m)</i>				<i>average (years)</i>	13

By examining what has worked best or not worked in the experiences described, and why, and what should therefore exist or be assured in order that effective participation a set of preliminary critical success factors for participatory processes in sustainability initiatives was retrieved. Rowe *et al.* (2004) alert that "establishing 'what works best when" (p.552) in public participation causes several research difficulties, as there is no precise definition for concepts such as 'effectiveness', and analysis relies on subjective interpretation. They consider, however, descriptive qualitative research as a

valuable option to identify possible variables. The list of preliminary CSF was prepared to be discussed in focus group discussions for deeper exploration (Bryman, 2012).

III.3.2 Second data collection: Focus groups

Focus groups are a common method in qualitative research to collect data via a group discussion in order to analyse perceptions, opinions and thoughts referring to a particular topic (Krueger *et al.*, 2000). Due to usually informal settings and a relatively small group size, interaction between group participants is facilitated and can provide new aspects about the topic at study that would be difficult to collect in a different research approach.

For the second data collection, focus groups were considered the most appropriate method, as the objective was to investigate further (i) how the participants perceive the list of CSF previously obtained, (ii) to complete the previous data by integrating further aspects generated in the discussions, (iii) to analyse the level of importance attributed to the CSF, (iv) to discuss experiences with sustainability assessment tools and possible assessment criteria for participation while looking as well for (v) additional emerging patterns.

The focus groups were set up during academic meetings and conferences related to *Education for Sustainable Development in Higher Education* (European Virtual Seminar (EVS) Meeting 2013, Sinaia, Romania; and Regional Centres of Expertise (RCE) Meeting 2013, Kerkrade, Netherlands) and *Sustainability in Universities* (ESCR-EMSU 2013, Istanbul, Turkey) as well as at a German university that is considered a pioneer in holistic sustainability implementation and that has highly experienced experts in this field. Participants were selected similarly to the first data collection (convenience sampling with previous contact by e-mail), i.e. sustainability experts from diverse backgrounds, but with a minimum of a two-years working experience in campus sustainability. The participants (N=36) were represented equally by female and male (50% each), were mostly in the age group 30-39 and 50-59 years (31% each) and pursued mostly a postgraduate degree (Table III.2).

Table III.2: Socio-demographic data of focus group participants

		f	m	N
gender		18 (50%)	18 (50%)	36 (100%)
age groups	20-29	4 (11%)	0	4 (11%)
	30-39	6 (17%)	5 (14%)	11 (31%)
	40-49	2 (6%)	4 (11%)	6 (17%)
	50-59	3 (8%)	8 (22%)	11 (31%)
	60-69	3 (8%)	1 (3%)	4 (11%)
level of education	Bachelor	2 (6%)	0	2 (6%)
	Master	10 (28%)	4 (11%)	14 (39%)
	PhD	6 (17%)	14 (38%)	20 (56%)

III.3.2.1 Focus group procedure

The groups were composed of 4-12 participants and one moderator (first author), with a relatively homogenous distribution of gender, age and working experience between the different groups. A planned fifth focus group could not be realised due to agenda incompatibilities of the selected participants and was transformed into three individual interviews and one interview in pairs, following a slightly adapted procedure to the focus group, but maintaining the same objectives (Table III.3).

The focus group procedure for this study was inspired by the Delphi method and analysis methods applied in project management, like the relevance tree (Drews *et al.*, 2007, p. 136). At the beginning of the discussion, the participants were introduced to the scope of the study (see appendix A10-A13) and to the list of CSF retrieved from the first data collection (Table III.4). Focus groups with more than four participants were then divided into two groups, A and B. Every (sub-) group was provided with a set of cards containing a CSF on each card, including some blank cards for further notes. Participants were requested to discuss the CSF in their (sub-) group and to organize the cards according to the importance they would like to attribute to the respective CSF (see appendix A13 for details on the procedure). Further factors could be added, if wished. At the end, the subgroups presented their results to each other, followed by a plenum discussion. During the card exercise, the moderator was not actively involved,

being only in charge of clarifying doubts, controlling time and guiding to the final plenum. In the cases where the focus group discussion was substituted by an individual interview, the procedure was similar: the participant organised the cards according to the personal perception of importance, only the plenum discussion was skipped. As the respondents possessed a high level of expertise, the data geared in these interviews were considered important and could be integrated satisfyingly into the analysis.

Table III.3: Composition of focus groups

Focus group (FG)	Group	N	Nationalities	working in sustainability (average in years)
FG1	A	4	Romanian, German, Austrian, Dutch	8
	B	4	Portuguese, Greek, German, Romanian	
FG2	one only	4	Austrian, South-Corean, British Greek	11
FG3	A	3	Czech, British (2)	13
	B	4	British, French, German, Swedish	
FG4	A	6	Belgian, British, Swedish, Canadian, Dutch	8
	B	6	French, Belgian, Mexican, German	
Exp. Int. I	n/a	2	German	15
Exp. Int. II	n/a	1	German	13
Exp. Int. III	n/a	1	German	15
Exp. Int. IV	n/a	1	German	12
total N		36		10

Each focus group and interview lasted approx. 60 minutes and was video- or audio recorded, respectively. Pictures were taken from the final card sorting. Observations were noted down during and after the discussions. Relevant sections of

the video and audio files, like the participants' explanation about their card sorting and plenum discussions, were transcribed and anonymised.

III.3.2.2 Data analysis

All types of material sources collected during and after the focus group sessions, namely video / audio, pictures, transcripts and field notes, were considered for the data analysis, following again the qualitative content analysis procedure according to Mayring (2000, 2012)). A focus was set on similarities and differences as well as on aspects highlighted by the participants, in order to identify emerging patterns and the levels of importance attributed to the CSF. Based on these outcomes, a matrix was developed to rank the card sorting order, classifying the CSF into four categories: 1 - very important, 2 - important, 3 - still important but less, 4 - least important, considering as well proximity and distances of how the cards were placed. This ranking was then compared to the patterns and additional CSF emerged during the focus groups and integrated into a final concept map (Novak, 1990) to support visually some of the findings.

Qualitative research rises different questions related to reliability and validity differently than quantitative research, and applies alternative criteria for its evaluation (Bryman, 2012). The authors conducted the research with highest sensitivity to the context, commitment and rigour as well as transparency in all research steps. In order to avoid observer biases (Angrosino, 2004; Bryman, 2012), the authors applied an overall reflective and conscious attitude to reconsider influences of personal assumptions and preconceptions and hope to have addressed best the shortcomings of qualitative research regarding the concerns about subjective interpretations.

III.4 Findings

General remarks

Similarly to the term 'sustainable development' or 'sustainability', the term 'participation' can be perceived differently, and due to its vagueness and manifold

possibilities of understanding many options coexist (Brodie *et al.*, 2009; Fung, 2006). This phenomenon could also be observed in this study, as participants sometimes used the same terms while meaning different issues, making the analysis more complex and difficult. Since the study does not focus on the different perceptions and understandings related to participation, but aims to identify critical aspects for effective participation in sustainability efforts at university level, the experiences described were analysed based on their rich descriptions of successes and failures. First, the participatory approaches to sustainability implementation, reported by the first sample group, are resumed and linked to different forms of participation for a better contextualization of the findings. Next, failures and successes of these approaches are portrayed and resumed in a list of CSF. Finally, based on the second data collection, the CSF are ranked and completed with a clusters map emerged from the focus group discussions.

III.4.1. Variety in participatory approaches to implement sustainability

The interviewees of the first sample reported about different types of sustainability initiatives in which they were involved:

- Campus Retrofitting with a *public participation* approach
- Creating a campus garden (*individual/social participation*)
- Executing a student-lead referendum for a campus sustainability tax (*public participation*)
- Executing a World Cafe³ as a kick-off for campus sustainability ideas (*public participation*)
- Holding conference meetings related to climate change and sustainability (*individual participation*)
- Implementing environmental management systems (*individual/social/public participation*)

³ The World Café is a participatory process method using small group discussions in a cafe setting. Further information can be found at <http://participationcompass.org/article/show/166> [accessed 02-10-2013].

- Organizing activities for signing the declaration *Higher Education Sustainability Initiative Rio+20 (individual/social/public participation)*
- Organizing online forums (*individual/public participation*)
- Organizing workshops related to sustainability (*individual/social/public participation*)
- Student projects related to campus sustainability (*social participation*)
- Town hall meetings for the development of a Sustainability Action Plan (*public participation*)
- Projects related to biodiversity and other activities in a university botanical garden (*individual/social participation*)

This list of initiatives dem a large variety of di forms of participation (individual /social / public participation) and consequently different objectives and levels of participation can be at stake (see section III.2.1.). Data was analysed as a whole and not fragmented into different types of participation, in order to obtain a more global view of the failures and successes experienced.

III.4.2 Failures and successes based on reported experiences

Overall, interviewees classified the participatory approaches in the initiatives that they described as *fairly successful*, with some examples being *very successful* and others being *not successful at all*.

When referring to successes, most interviewees highlighted that many people were participating, sometimes also specifying the large variety of different stakeholder groups being involved, i.e. students, non-teaching staff, teaching staff, and even external stakeholder like external partners or the local government authorities, underlining positive aspects like 'more dialogue' or attributing a positive time perspective where participants are seen as 'future advocates / champions':

Maybe one criterion could be that the people involved now could get more involved or inspired by the idea of sustainability. And I think in this way it was a great success. Fifty people, I think some of the guests, (...) got at

least very inspired to think about sustainability. And if they are 'multipliers'⁴ or other people who deal with some kind of sustainability at university, I think it was a great success. [#6⁵, participatory approach / initiative: World Café]

On the contrary, the absence of relevant stakeholder groups in the process was perceived as a failure:

There were some things that were very successful, and a few initiatives a spectacular failure; they didn't really manage to bring everyone in. [#13, participatory approach / initiative: student projects related to sustainability]

Faculty members were considered to be the most difficult group to engage, as pointed out by several interviewees from the same stakeholder group, but a better collaboration, particularly between administrative staff and faculty, was experienced as an enriching teamwork that would keep the process ongoing:

Well, I still think that it's really good to have, you know, the variety of both from faculty and from administration staff together. Because sustainability is so wide, so then maybe you discuss with your colleagues about something, but then you hear something else and you get new ideas. So, I think that's also one aspect why it is successful. [#5, participatory approach / initiative: Signing the Higher Education Sustainability Initiative Rio+20]

However, the lack of time and availability, in particular from staff and faculty, were experienced to block well-intentioned participatory approaches. High workloads and different lists of priorities were also mentioned as impeding factors for a more successful participatory process:

"So, in order to get participation, we very much rely on good willingness, and that is not sustainable. That's the problem. One of the big issues that we find is that people are very passionate about it, they want to be involved, but because it's not part of their job, then they sometimes have difficulties to free some time." [#3, participatory approach / initiative: various]

⁴ 'Multipliers' or 'multiplier' is commonly used in German-speaking regions and refers to persons who disseminate and spread a certain idea. In English, most closely are terms like 'advocates' or 'champions'

⁵ This numbering refers to the participants' profiles as in Table III.1.

“Well, for example: The Sustainability Action Plan's objective was to have an overall picture of the things we are doing already, and how we can do it more systemically, how we would have sustainability included in the service units or the operations. The idea was to involve everybody (...). How would Human Resources contribute? How does our International Office contribute? How would IT contribute to the overall sustainability? To involve everybody, so I would describe it as 'not successful at all', or 'not successful', because people were too busy and with work overloaded, and this [topic] is not, you know, their focus...” [#4, participatory approach / initiative: Development of a sustainability action plan]

But when describing the most successful aspects of the participatory approaches, several interviewees highlighted the positive emotions participation may stir up, referring to feelings such as esteem, joy, confidence, optimism, acceptance, recognition, empowerment, of all parties involved:

“You know, so that people hopefully felt valued.” [#14, participatory approach / initiative: town hall meetings and online forum for a Sustainability Action Plan]

“I think, we also constructed optimism about solving problems for sustainability and it's a discipline where there is not a lot of optimism, right? Most things are just very depressing, but I think we are all really empowered, all of us were empowered, which is... 'we can do it here, and we can do it here, and here, and here. We should be able to go to any place.’” [#15, participatory approach / initiative: retrofitting of campus]

“(…), but by having this participatory process suddenly it is easier for the administration and the physical plant and the contractors, because we have students that are helping to do the research, and the students feel like they're getting a better building to study, because they got to say 'wouldn't this be cool, if we had this in the building'. So, all those physical things added up to a really good product, but the process was not painful for anyone, it was actually much more enjoyable and we all feel very confident in the process and the product.” [#12, participatory approach / initiative: retrofitting of campus]

These potentials for transformation were linked to raising champions and to capacity-building, perceived as being the most positive aspects in a participatory approach.

“The engagement in the process is always very positive, because you really benefit from something, when you manage to get people together to achieve one specific goal and when you see they don't give up, because

they have to overcome a number of difficulties. So, I find it very positive, because it means that you are truly open and determined to do this job. Maybe this is the most positive aspect: the capacity-building. Because, when you are successful, then you can spread this positive output of your effort. This is also a good achievement, because it's easily spread and you can contaminate others and engage others in the same process. But, well, maybe the most positive aspect is that we are raising champions.” [#8, participatory approach / initiative: Biodiversity / university garden]

For institutional-wide change, however, the support of the university's presidency and a more systemic approach were perceived as necessary in order that the outcomes of a positive participatory approach can have a longer lasting impact and not turn into frustration:

I would classify it [the initiative] as 'not successful'. Because, I think there were some good attempts in there, but I actually think in terms of having goals that have been brought into by the entire community, and (...) and then you're dropped off a cliff [by the university (top-)management]...(...) I think that at the high levels, they wanted to have the appearance of participation, more so than actually deal with having so many opinions on the table. [#14, participatory approach / initiative: Town Hall Meetings to develop a Sustainability Action Plan]

They're mainly ad-hoc. Kind of isolated examples that tend to burn out. [#1, initiative: Workshops]

By analysing what has worked best or caused failures, and which can be possible reasons or specific requirements needed for success, several items were identified as preliminary critical success factors, including positive outcomes / benefits of participatory approaches (Table III.4, items are in alphabetical order). These factors were put on small paper cards and presented to participants of the focus group discussions as explained in the methods section III.3.2.

Table III.4: Preliminary critical success factors for participatory processes in sustainability initiatives in HEIs (results from the first data collection)

Critical success factors	
<ul style="list-style-type: none"> • Communication • Enough time • Identification with goals • Making sure that the right people are at the table and that they are heard • Non-judging attitude • Personal strength and persistence 	<ul style="list-style-type: none"> • Starting on time • Stimulate positive feelings • Strategy with a goal • Support of top-management • Tangible objectives • To find out what people are caring about
Outcomes / Benefits	
<ul style="list-style-type: none"> • Capacity Building • Collaboration • Confidence • Empowerment • Increase of acceptance 	<ul style="list-style-type: none"> • More dialogue • Networking • Optimism • Positive image of the university • Raising champions

III.4.3 Ranking of CSF and emergent clusters

Cards were sorted differently in each (sub-) group and expert interview, but the most often chosen form were placing the cards in rows, which were described as a "timeline", "process" or "clusters", indicating sometimes a hierarchical level:

"This is both, an order of importance, we say, this is the most important set of factors. This ranks second, this ranks third; it has more process characteristics. But we discovered also there is basically a timeline in where you start, basically 'first things first'- idea. We start here and this is what you follow. "[FG1_A_m1]⁶

"Process" was one of the most often referred terms in all groups, followed by "structure":

"Looking through the statements we thought that we are seeing specific clusters of statements, having to do with the structure of conditions, with the personal characteristics of those involved and finally the process". [FG1_B_m2]

⁶The code refers to the focus group compositions of Table 3 and indicates first the specific number of the focus group, then the subgroup (A or B) and, third, the gender of the participant (m= masculine, f= feminine).

"We first thought of four very broad categories, content and process/related things and then more a kind of structural aspects of a process-management. So, in terms of content and processes we thought that all these things were quite important." [FG4_B_f]

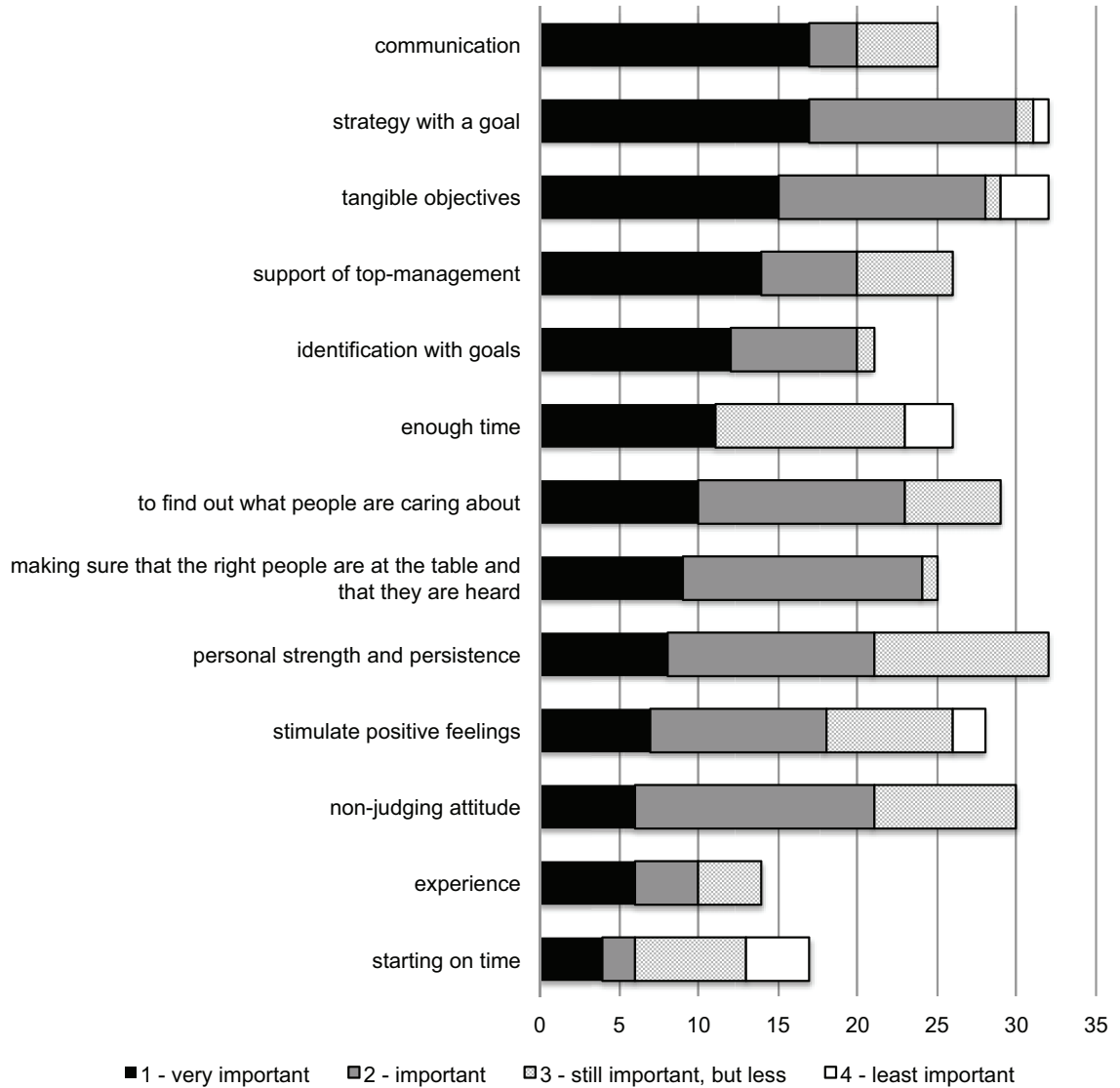
However, some participants preferred not to follow a hierarchical categorization, considering the factors equally important depending on the specific context:

"First we say 'It depends on!' [General laughter] The academics are completely satisfied with this answer [general laughter]. But it really depends on context, on the persons involved and on students engagement, where we need the champions... And depending on this - the persons and the context- we have to pick up the critical success factors, according to the situation, and that is why we created a basket [general laughter]. Maybe it is also a kind of backpacker's philosophy, where you have all you need in your rucksack. [FG3_B_m1]

Based on the combined analysis of the focus group transcripts, pictures and a specific matrix developed as explained in section 3.2.1, the critical success factors were ranked according to four levels of importance: (i) very important, (ii) important, (iii) still important, but less; (iv) not very important (Figure III.1).

Communication was most often considered as a 'very important' critical success factor, together with *strategy with a clear goal*, whereas *starting on time* was perceived merely 'less' or 'least important'. Overall, the perceptions of importance vary significantly between items and reflect a blurred picture about the CSF ranking.

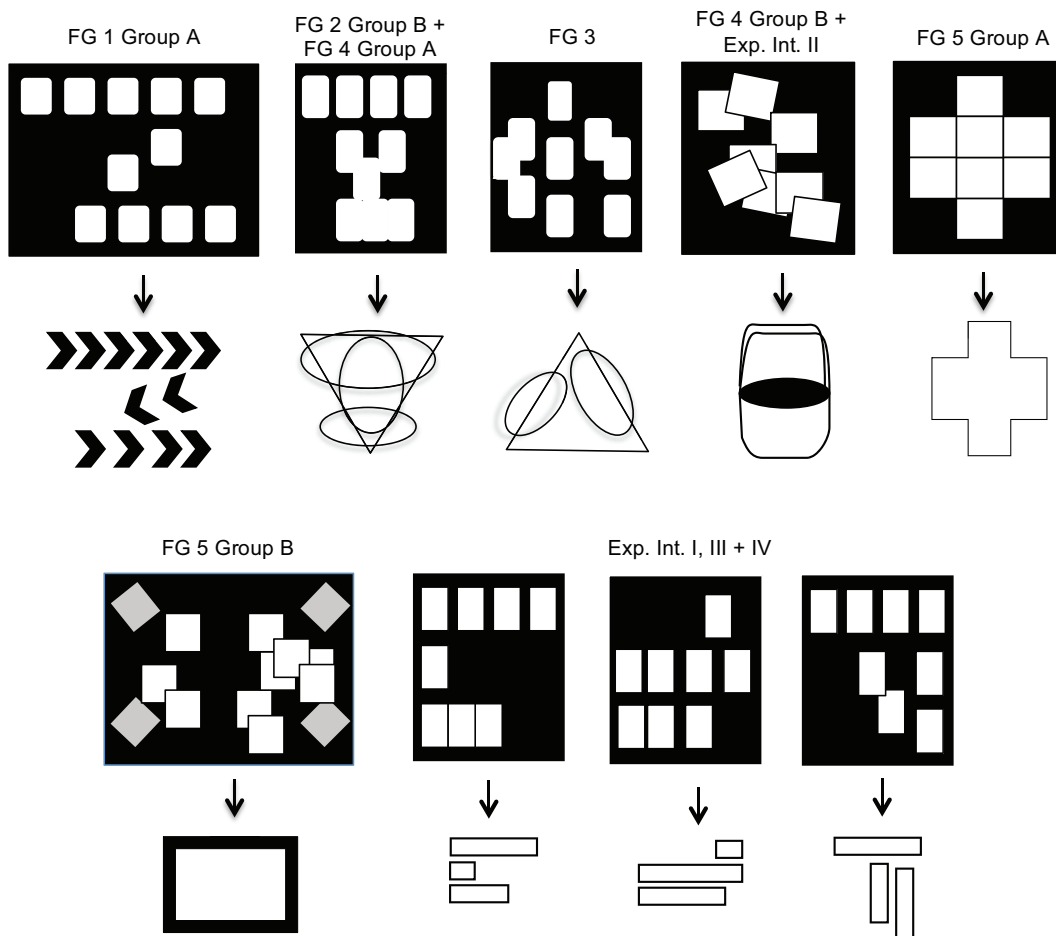
Figure III.1: Critical success factors for participatory processes - perception of importance according to the sample



Note: N=36, but only applied where applicable

The graphical analysis of the cards' sorting exercise reveals a variety of approaches to classification: cards were placed, for example, in form of a pyramid, 'basket', cross, frame or blocks, that can be seen as a preference to combine classical hierarchical ranking with an additional non-linear approach (Figure III.2). As grouping the CSF into clusters and outlining interdependences and relationships was the most often choice, it can be considered more appropriate to identify patterns than to follow a quantitative or linear classification for the CSF.

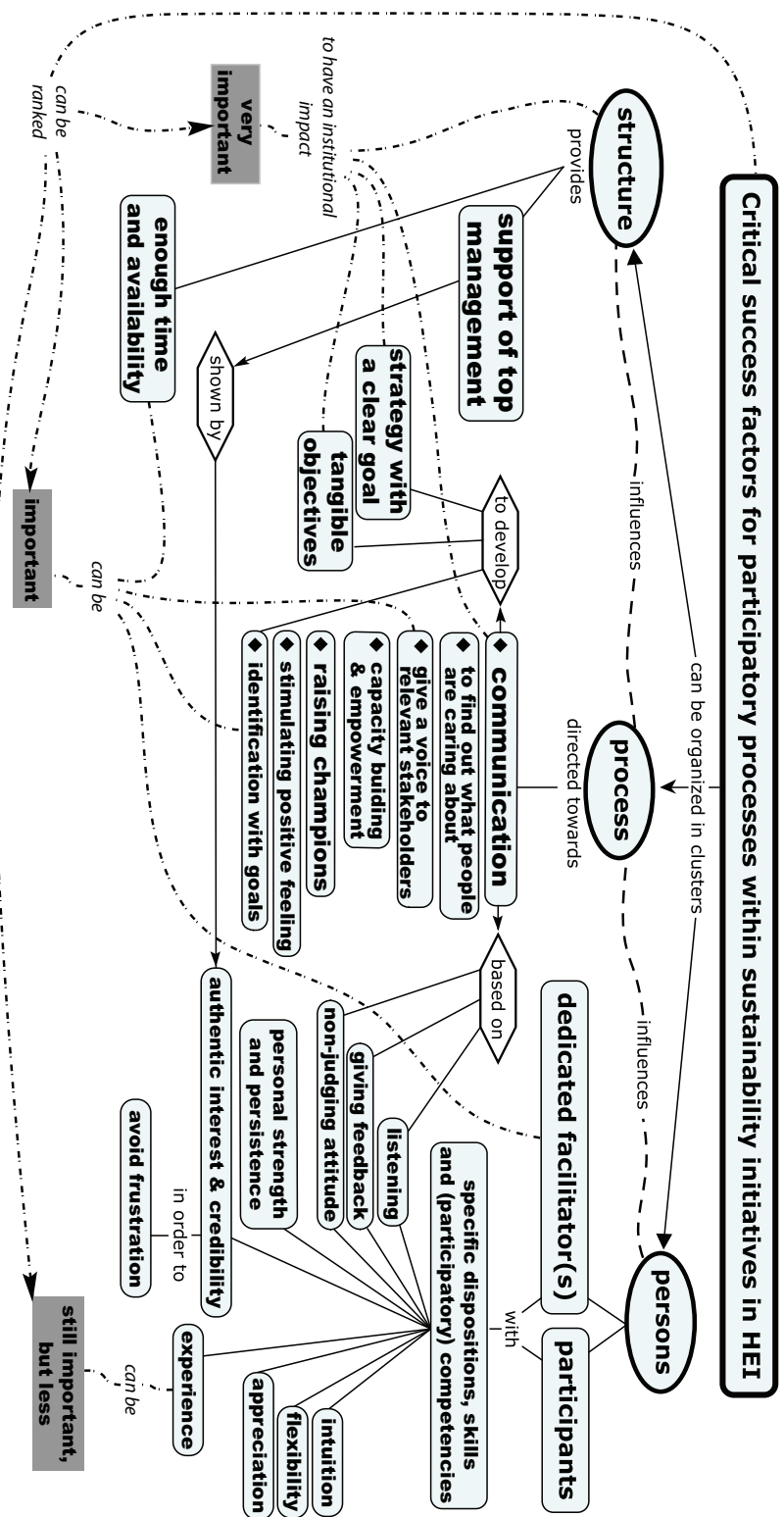
Figure III.2: Schematic representation of CSF organization (card pictures): Black squares illustrate the cards positions (upper row) and the corresponding graphical trends (lower row)



Three main clusters emerged (Figure III.3), related terms were put in *italic* in the following section): CSF were grouped into structure-, process- and persons- related issues that are influenced by each other. Further CSF were added or modified to the preliminary list. The structure provides *enough time and availability* for a participatory approach, and eventually the support of the university's high board members (*support of top management*), that was considered to be very important if the sustainability initiative strives to have an institutional impact. The process of a participatory approach should be directed towards a *communication* strategy aiming to *find out what people are caring about* and be based on *listening, giving feedback* and a *non-judging attitude*. This form of communication should allow developing together a

strategy with clear goals that the participants identify with (*identification with goals*) and that has *tangible objectives*. Overall, the process should be focused on *capacity-building, empowerment, allowing raising champions, stimulating positive feelings* and *give a voice to relevant stakeholders*. In the cluster related to persons it was highlighted in particular the advantage, or even the necessity, of having a *dedicated facilitator* to lead throughout the participatory process, without specifying further the group of participants. But the facilitator and participants should have *specific dispositions, skills and participatory competencies*. These can be, for example, communication skills, as outlined above, as well as *intuition, personal strength and persistence, flexibility, and appreciation*. Furthermore, there should be *authentic interest* and *credibility* from all parties involved, shown as well from the university's top-management, in order to *avoid frustration* and encourage continuous participation.

Figure III.3: Clusters of critical success factors for participatory processes within sustainability initiatives in HEIs



III.5 Discussion

Overall, the experiences described by the university sustainability experts in this study demonstrate consistency with some previous studies about sustainability in higher education, as they mirror:

- (i) the manifold varieties of sustainability initiatives existing in universities that can be either student-led or institutionally initiated (or a combination of both) (Brinkhurst *et al.*, 2011);
- (ii) the diversity of implementation strategies universities choose to foster sustainability (e.g. Barth, 2013);
- (iii) the shift from a ESD perception focused on environmental sustainability to a more holistic approach, emphasizing transformative learning (Wals, 2014), in as much as the participants have given high value to empowerment and capacity-building. The findings point also to an increasing use of public participation approaches and to the growing expertise HEIs are gaining in ESD.

Furthermore, the findings give empirical evidence to some of the aspects of stakeholder engagement regarding risks (Collins *et al.*, 2005) and benefits (Narain Mathur *et al.*, 2008; Reed, 2008): Similarly to those studies, the respondents in the present research highlighted risks such as lack of resources, credibility and frustration, and in return the positive outcomes, such as increase of acceptance, confidence, more dialogue and optimism. The focus group discussions revealed in particular the importance of specific competencies for participatory approaches, pointing out that required participatory skills need to be trained and developed, not only by the participants but as well by those who aim to lead through participatory processes. This aspect is of importance with regard to teacher training and/or to the need of ESD trained facilitators, as there is still a lack of sufficient attention to the development of ESD competencies for faculty and staff (Barth *et al.*, 2012). However, these competencies can be vital for the success of a public participation process, as shown

also in research conducted out of the university context and in which the need of highly skilled facilitators is emphasized (Reed, 2008).

The findings also point to the complexity inherent to participation, as the success of a process does not depend only on the persons engaged, but likewise on the structural conditions. These conditions would allow participants to allocate enough time and availability, and ideally provide the support of the university's high board members. The latter, however, can be discussed divergently: Some respondents underlined that this support is important in order to integrate sustainability initiatives into the institutional structure, whereas others made clear that initiatives can also be successful without the top-management's support, as many student-led projects prove. These typically bottom-up initiatives can nevertheless have an institutional impact by challenging existing governance structures in HEIs and can exert pressure for change (as e.g. the referendum initiated by students for a campus sustainability tax in this paper).

These initiatives reflect thereby the political dimension of participatory approaches in sustainability and can be seen as a field of learning of democratic values and encouragement to enact a responsible citizen role, as projected in Agenda 21. This may apply to the different forms of participation (individual, social or public), as there is overlapping; yet a more differentiated understanding of participation is necessary, as objectives and level of decision-power can vary significantly depending on which kind of participation is pursued. Overall, there is still relatively low attention given to the political dimensions in campus sustainability implementation, and the focus group discussions dealt only indirectly with questions related to power and governance structures of HEIs.

An institutional culture of participation, as requested by Reed (2008), appears to be less associated to the success of participatory approaches within campus sustainability initiatives. But the accentuation of interdependencies of process, structures and persons, as demonstrated in Figure III.3, can allude subtly to a more cooperative style of governance (Enders, 2004), that would focus on a more inclusive communication strategy, as emphasized in the concept map, and that would give space to new forms

of democratic expressions (Fung *et al.*, 2001). The participants in this study highlighted the importance of capacity-building and empowerment which fall into the categories of transformative participation and critical thinking as targeted in ESD (Barth *et al.*, 2013a), and underlined the necessity to give a voice to relevant stakeholders. However, it was not debated *if* and *to what extent* participants should be engaged in decision-making (Arnstein, 1969; International Association for Public Participation, 2007).

Following the ideas of White (1996), there is a risk that participatory approaches serve interests of display (e.g. positive image of the university, 'greenwashing'), or are instrumentalised to achieve a specific goal (e.g. saving costs), that may cause frustration and loss of confidence. Therefore, it is essential for practitioners but also for high board members, to be self-critical and to examine the underlying motivation for a participatory approach, in order that participants can feel an authentic interest from the institutional side. Monitoring and evaluation can be regarded as helpful in this sense, as they allow more transparency and enhance credibility, and can in turn support participants' disposition for a continuous participation, as pointed out in the findings.

III.6 Conclusions

Despite relying strongly on a given context that is different in each university, participatory processes can offer different kind of positive outcomes and benefits for the academic community and their efforts in fostering sustainable development. These can be, among others, a better quality of dialogue, a higher awareness for sustainability and empowerment. But participatory approaches also imply risks and challenges, in particular related to institutional governance, as structural conditions may become necessary to be revised.

A better integration of the dimensions of participation into sustainability assessment practices can be considered desirable, in particular with regard to establishing participatory approaches on institutional level and fostering a culture of

participation in the transition to sustainable universities. However, assessment for participation calls for a more non-linear approach, including qualitative elements and preferably the participants themselves, as classical linear or static forms of sustainability assessment would neither give justice to the complexity of participation and SD nor reflect satisfyingly the multiple realities in HEIs. The CSF clusters deduced in this paper, to be understood in a systemic manner, can hopefully contribute to develop a more inclusive assessment for participatory sustainability initiatives in HEIs.

With this research, the concept of HESD is strengthened as an important support to frame educational activities with regard on SD implementation. Further reflection on the scope of empowerment and capacity building, in particular with regard on the engagement in decision-making, are needed in order to take HESD to a further level of SD implementation. As suggested in the findings, universities are urged to invest more in ESD staff training and to open up for new governance models, if they indeed wish to be key players in sustainability. The academia in general, including students and non-teaching staff, is invited to seek and experiment new paths towards a culture of participation that allow broadening new ideas about sustainable universities. By following a qualitative approach and mapping the experience of sustainability experts within participatory approaches, this study provides insights from voices not yet presented in this manner, and wishes to encourage taking new perspectives in the sustainability debate at university level.

Limitation of the study and future research

As the present study is based on subjective experiences of a relatively small sample group, the list of CSF and respective clusters can be considered neither complete nor representative. Even though the study is internationally orientated, with participants coming from twenty different countries, the geographical scope is still limited and cultural aspects are not taken into consideration.

Future research could explore in more detail differences between stakeholder groups in HEIs (i.e. students, teaching and non-teaching staff, relevant external groups), as well as compare facilitators' and participants' perceptions and needs within

participatory processes. Thereby, research could acknowledge in more depth the societal profile of the academic community as well as the specific institutional characteristics of universities, and compare it with studies about participation and SD conducted outside the university context (e.g. Macnaghten *et al.*, 1997; Feichtinger *et al.*, 2005). As this is an ongoing study, these aspects are to be included in following research phases.

Participatory processes in sustainable universities – what to assess?

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Abstract

This paper connects participatory sustainability implementation with sustainability assessment, exploring learning theories, the principles of Higher Education for Sustainable Development (HESD), and respective indicators applied in the university context. Even though participation is partly considered in existing assessment practices, it is still unclear what and how to measure participatory processes that envision implementing sustainability principles in higher education institutions. Holistic approaches are often proclaimed, but reductionist assessment methods are frequently followed. The study followed a qualitative approach, inspired by the Delphi-method, and includes semi-structured expert interviews (N=15) and two focus group discussions (N=23), with participants coming from a total of seventeen different countries. Data was analysed and compared according to qualitative content analysis, and systemized according to the underlying theoretical strands.

The findings suggest that participatory processes can be better assessed from a social learning and organisational learning perspective, emphasizing non-linear criteria for the quality of the process in terms of depth and meaningfulness, as well as criteria for the quality of the outcome in terms of knowledge generation and innovation. The findings also point implicitly to the need of considering double- and triple loop learning, if a culture of participation towards sustainability is to be pursued, and underline the high impact of institutional governance.

Although a great volume of literature about sustainability implementation in higher education exists, studies focusing on participatory processes in this context are rather scarce. This research pays attention to sustainability experts working in universities

rarely heard in a more systemic manner, and also applies a reflective participatory approach itself by using qualitative methods.

III.7 Literature review and theoretical context

This section starts with laying out the ties between participation and sustainability assessment, followed by short summary about sustainability assessment in higher education. This field is linked to learning theories and to specific educational indicators such as ESD indicators.

III.7.1 Linking participation and sustainability assessment

The debate about the implementation of sustainability principles and values into higher education (HE) has been growing over the past twenty years, and an increasing number of universities is engaged in this implementation process in the most varied ways (Barth, 2013). There can be noted advancements in operational dimensions of a university, in curricular and educational transformation as well as in research and outreach activities (Global University Network for Innovation (GUNI), 2012; Leal Filho, 2009). However, despite all progress, in most cases, sustainability has not become yet an integral part of the university system (Lozano *et al.*, 2013a), and the requested paradigm change from un-sustainability to sustainability in university systems is not yet fully identifiable (Disterheft *et al.*, 2013b; Sterling, 2004). Participatory processes are seen as valuable for this paradigm change, and can contribute towards the integration of the sustainability concept into the university culture (*ibid.*). However, the concept of participation is at present vaguely defined (see e.g. Brodie *et al.*, 2009; World Bank, 1996, for definitions), but not contextualized to sustainability in higher education. Universities tend to focus on social participation, such as volunteering, and distinguish less between other forms, such as individual or public participation that would also include political dimensions (e.g. voting and direct involvement in decision-making). Even though participation is partly considered in existing assessment practices, e.g. student engagement in community outreach activities, it is still unclear what and how to measure, as the concept of participation touches areas of

institutional governance, social learning and organisational learning. So far, there have been comparatively few research studies on participation within sustainability implementation at university level, and a more differentiated understanding of these processes is still missing, both in practice of conducting a participatory process as well as in the sustainability assessment.

This paper is part of an ongoing, mixed-methods research project that aims to investigate participatory processes in university sustainability initiatives. The final purpose of the project is to develop more specific assessment criteria and to contribute thereby to a better integration of the dimensions of participation into practices related to sustainability assessment in higher education institutions (HEIs).

The authors working definition for participation in the context of ESD in HEIs is based on definitions for public participation (International Association for Public Participation, 2007) and follows an integrative understanding of higher education for sustainable development (Fadeeva *et al.*, 2010; Mader, 2013):

“By participatory processes within sustainability initiatives we understand the engagement of all critical stakeholder groups into a deliberative process design to define goals, responsibilities and actions toward the transition to a more sustainable university now and in future.”

The relevance of this work is based on the fact that empirical knowledge in this field is still scarce and practical advice yet to be adapted to the university context. At the previous research stage, failures and successes experienced in participatory sustainability initiatives were analysed. This analysis led to some clusters of critical success factors that would help to prepare the way for a more inclusive assessment of these processes (Disterheft *et al.*, 2015b). This paper continues the previous investigation by focusing on possible assessment criteria, derived from and discussed with sustainability experts working in HEIs. It became necessary to extend the theoretical context of the research beyond democratic theories, Higher Education for Sustainable Development (HESD) and stakeholder engagement (dealt with in detail at III.1-III.6), and to include in more depth learning theories and sustainability related indicators that foster in particular the learning dimension of participatory processes, as

these can be useful for a more meaningful transition towards sustainable HEIs. These theories combine the educational dimension in collective processes with learning for change that is considered essential for sustainability implementation as a focus is set on critical reflection and space for emerging new world views (Barth *et al.*, 2013a; Cebrián *et al.*, 2013).

The specific objective of this paper is to analyse sustainability practitioners' opinion and experience in sustainability assessment in higher education, in order to deduce possible assessment criteria for participatory approaches in sustainability implementation. These criteria are subsequently systemized according to the theoretical context. The results are then critically discussed and linked to the sustainability debate in HEIs, aiming to point out some existing gaps and offering suggestions for taking participatory approaches and their assessment to a next level.

III.7.2 Sustainability assessment in higher education

Sustainability assessment (SA) is perceived as a necessary step within sustainability implementation, as stated in Agenda 21 (UNCED, 1992), and it is seen as very useful for assisting in decision-making and for helping to make policy and charter statements more operational (United Nations, 2007). Furthermore, SA can enhance the communication about the complexity of sustainability, strive for continuous improvement, and help identifying best practice examples (Shriberg, 2002). In particular, sustainability indicators are used to visualize phenomena, to highlight trends and to provide early warning to prevent economic, social and environmental setbacks (Singh *et al.*, 2009).

Several types of sustainability assessment tools are applied in universities (see Disterheft *et al.*, 2012a for an overview). These include, for example:

- (a) standardized management systems, like ISO 14001, EMAS, and ISO 26000;
- (b) university-specific tools like *Auditing Instrument for Sustainability in Higher Education (AISHE)* or *Sustainability Tracking, Assessment & Rating System (STARS)*, mostly indicators-based, aiming to evaluate overall campus activities;

(c) sustainability reporting, partly following the Global Reporting Initiative Guidelines (also based on indicators), with university-specific adapted tools such as the Graphical Assessment of Sustainability in Universities (GASU®) and the Sustainability tool for Auditing Universities Curricula in Higher Education (STAUNCH®).

These tools have highly promoted the sustainability debate within academia, but general concerns were expressed more recently that SA practices run the risk of catering more towards market demands than to societal needs and transformative change, in particular when focusing on competitive benchmarking and quantitative oriented ranking systems (Fadeeva *et al.*, 2010; Jones, 2012). The Alternative University Appraisal model was an output of those concerns and includes self-awareness questions and benchmark indicators questions that focus on introducing or advancing HESD activities (AUA, 2012; Fadeeva *et al.*, 2010).

Critical voices claim that many procedures in sustainability assessment follow a reductionist instead of a holistic approach (Bell *et al.*, 2008; Bond *et al.*, 2011). While reductionism can be useful to break down complex processes into simpler and easier understandable components, this approach, usually using a number of selected sustainability indicators, would hardly represent the complex interactions of a system (*ibid*). A holistic assessment instead would seek to establish “a process where communities are systematically involved in defining visions of sustainability and also the means to achieve the vision” (Bond *et al.*, 2011, p. 2). In this sense, participation can be seen as a mean and an end at the same time. It is regarded as well as a prerequisite for sustainable development (UNCED, 1992). However, like the term ‘sustainable development’, ‘participation’ has become a buzzword (Cornwall, 2008; Lele, 1991; Stakeholder Forum, 2012), and a more differentiated understanding and use of this term is needed (Disterheft *et al.*, 2012a) if participation shall not be merely instrumental or reduced to functions of display (Arnstein, 1969; White, 1996). To overcome some of these types of drawbacks, participatory evaluation (Cousins *et al.*, 2012; Cousins *et al.*, 1998) and stakeholder engagement have gained attention, underlining that the process of assessment for sustainability itself can be seen as a

thought-provoking process of learning (Bell *et al.*, 2008; Fraser *et al.*, 2006; Reed, 2008; Turcu, 2013). In particular, the stream of transformative participatory evaluation (Cousins *et al.*, 1998) puts emphasis on possibilities of empowerment when constructing knowledge and when participants can gain an “understanding of the connections of knowledge, power and control” (ibid., p. 8). Cousins *et al.* (2012, p. 27) understand the practice of evaluation⁷ itself as “a dynamic and emergent process”.

Bell *et al.* (2008, p. 147) defend the view that systemic sustainability analysis “is a participatory deconstruction and negotiation of what sustainability means to a group of people, along with the identification and method of assessment of indicators to assess that vision of sustainability”. For this to happen, SA needs to link the technical perspective of ‘what can be measured’ with the normative perspective by ‘what should be measured’ (McCool *et al.*, 2004), which is still presenting a gap in current practices (Dahl, 2012), as values are usually considered to be intangible. Nevertheless, research has advanced, and a set of value-based indicators for sustainability in civil society organisations, including universities, has been tested (Burford *et al.*, 2013; Burford *et al.*, 2012; ESD inds, 2011). Learning theories can provide further insights in this context.

III.7.3 Learning theories and related concepts

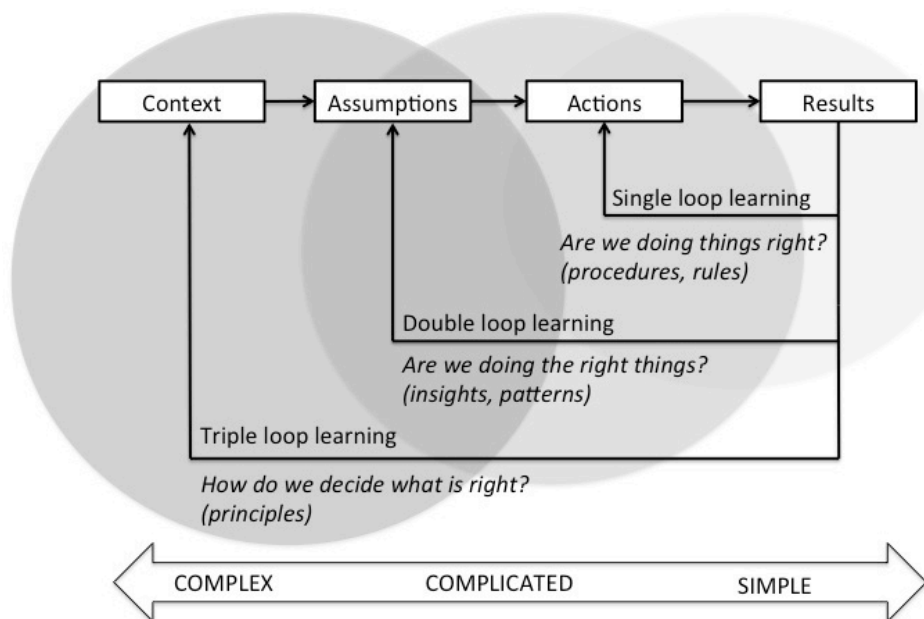
Transformative change that can boost the transition to sustainability is closely linked to systems thinking as well as to learning theories, emphasizing double-loop and triple-loop learning (Argyris *et al.*, 1978, 1996) (Figure III.4). These learning concepts are found in theories of organizational learning (ibid., Senge, 1990), communities of practice (Wenger, 1998), social learning (Bandura, 1977; Garmendia *et al.*, 2010; Wals,

⁷ *Evaluation* and *assessment* are related terms and sometimes used interchangeably, however they represent different purposes. Whereas *assessment* seeks to improve a performance or an outcome, *evaluation* seeks to determine the quality of a performance or outcome and to make decisions based on the quality (Baehr, 2013). For a more detailed differentiation see ibid. For this research, the term ‘*assessment*’ is considered to be more adequate, as sustainability implementation implies the intention of improving the sustainability performance of universities bearing in mind long-term outcomes and impacts. However, participatory evaluation research is a useful resource in this context.

2009b), transformative learning (Freire, 1972; Mezirow, 1997; Taylor, 1997) and more recently in theories of presencing (Senge *et al.*, 2004).

These theories can be regarded primarily as constructivist and derive from critical theory. By focusing on systemic approaches that stimulate continuous reflection and enable changes in underlying values and assumptions, these theories are understood as helpful to tackle the complex problems of our times that institutions and organisations are confronted with (Edwards, 2009; Peschl, 2007) and form the theoretical fundament for this research. These theories challenge existing worldviews and allow new visions to emerge that are needed for the transition to a sustainable paradigm. Figure III.4 outlines the loops of learning.

Figure III.4: Loops of learning



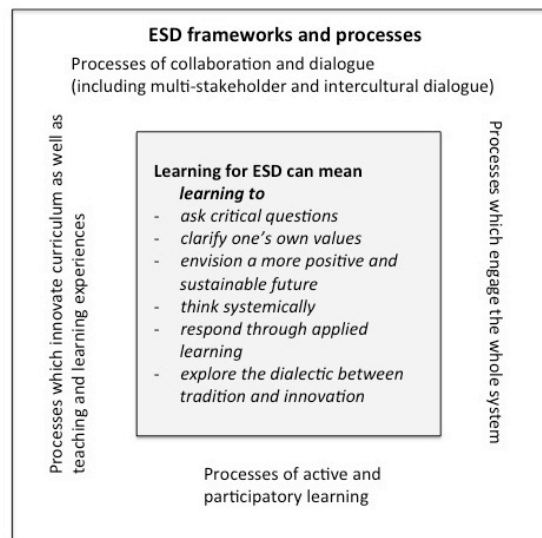
Source: adapted from Argyris and Schoen (1978) and Holmgren (2011)

Scholars of sustainability research in HEIs have engaged in these learning theories by perceiving them in an integrative, complementing manner and acknowledge that they can form a theoretical framework for sustainability implementation in higher education (Cebrián *et al.*, 2013; Mader, 2013; Moore, 2005; Wals *et al.*, 2002). Other

scholars emphasize the potentials of social learning for the development of specific sustainability competences (Barth *et al.*, 2013a; Reid *et al.*, 2008; Wals, 2010b) and underline the institutional role of universities of being change agents towards more sustainable societies (Ferrer-Balas *et al.*, 2010; Hansen *et al.*, 2006; Peer *et al.*, 2013).

These approaches align more or less with the concept of Education for Sustainable Development (ESD), promoted by the UN Decade for ESD (2005-2014), which envisions providing everybody with learning opportunities that motivate social change towards sustainability (UNESCO, 2011). ESD, also described as a global movement, is understood as a concept for re-directing educational policy-making, investment and learning practices for sustainability, in which the listed learning theories can be of support. Tilbury (2011) summarizes the ESD frameworks into four types of processes that strive for (i) collaboration and dialogue, (ii) engaging the whole system, (iii) active and participatory learning, (iv) curriculum innovation and new teaching and learning experiences. All forms have in common being action-based, and aiming at reflective and stimulating ways of learning (Figure III.5).

Figure III.5: ESD frameworks and processes with associated learning



Source: adapted from Tilbury (2011)

ESD incorporates aspects of transformative and social learning on diverse levels, e.g. by strengthening a dialogue, by highlighting the engagement of the relevant stakeholders and participatory learning, and by stressing that learning should be directed towards critical thinking and reflection about personal values (Mulà, 2011; Tilbury, 2011; Vare *et al.*, 2007; Wals, 2009a). Some scholars defend a better linkage of the three domains of learning, namely cognitive (head), psychomotor (hands) and affective (heart) in order to achieve transformative sustainability learning (Sipos *et al.*, 2008). Wals (2010a, p. 147) adds a political dimension, based on the understanding of deep democracy that he and many others associate to sustainability, by alerting not to “prescribe[...] authoritatively how people should live their life” and that “the processes of searching and engaging are as important, if not more important, than their outcomes” (*ibid.*). Democratic values and citizenship are core values in education (Dewey, 1916), and so they are in ESD, being simultaneously intertwined with the concept of participation (Cornwall, 2008).

Reed *et al.* (2010) underline the importance of being clear in terminology and interpretation of social learning, as the concept is often wrongly attributed to any type of group processes. They define social learning as a process that “(1) demonstrate[s] that a change in understanding has taken place in the individuals involved, (2) demonstrate[s] that this change goes beyond the individual and becomes situated within wider social units or communities of practice, and (3) occur[s] through social interactions and processes between actors within a social network” (*ibid.*, p.1). These authors stress that social learning should not be equalized with (public) participation or participatory processes per se, but rather see stakeholder participation as a principle and a method for social learning, in which the kind of design of these processes impacts the outcomes in terms of socio-ecological changes (*ibid.*). A better understanding and careful consideration of these related theories could therefore not only enhance the facilitation of participatory processes, but also their assessment.

III.7.4 Indicators for Education for Sustainable Development (ESD), transformative and social learning

In the context of the present study, indicators that intend to assess processes, outputs and outcomes directed towards sustainability, with a focus on learning and change, are of particular interest, as they seem to be very useful for analysing the diverse aspects related to participatory approaches.

Various ESD indicator development projects were carried out in different regions of the world (Di Giulio *et al.*, 2012; ESD Quality, 2012; Podger *et al.*, 2010; Reid *et al.*, 2006; Tilbury, 2007; Tilbury *et al.*, 2006; UNECE, 2008). ESD indicators can partly overlap with sustainability indicators and educational indicators, as these comprise in more general terms the analysis of the performance of the educational system (Mader, 2013). ESD indicators, instead, intend to capture how well sustainability is integrated into the different levels of an education system. Often, a focus is set on the macro- and meso level, i.e. how well governmental and institutional structures do provide space for ESD (Rode *et al.*, 2008). Table III.5 outlines the relevance of such indicators.

Table III.5: Relevance of ESD indicators

Item	Relevance
Quality	ESD indicators attest the quality of the work done
Progress	ESD indicators allow a check if progress has been achieved, against pre-set targets
Relevance	ESD indicators enable the thematic relevance of the action undertaken to be identified
Time-line	ESD indicators support the timely achievement of the goals set
Inclusiveness	ESD indicators cater for contributions from the relevant stakeholders

The existing ESD indicators sets currently available and being used differ in both focus and scope, but researchers agree on that these sets are not static and need to be continuously further developed: Indicators shall be updated and adapted to a given context, seeking in general to follow a whole-system approach and to include quantitative as well as qualitative information (*ibid.*). Even though ESD is process-

oriented (see previous section and Figure III.5), Tilbury (2011) noted a lack of process indicators, as in most of the existing ESD indicators initiatives objectives and outcomes are explained, but not explicitly the process itself. Specific ESD indicators on the micro level, i.e. on the learning processes and incorporating the dimensions of participation, are still lacking (as can be seen e.g. in Di Giulio *et al.*, 2012; Mulà, 2011). Furthermore, there have been noted gaps in including ethical and value-based indicators (Burford *et al.*, 2013) for which reason specific indicators integrating the ethical dimension of ESD (and the millennium development goals) were developed (Burford *et al.*, 2012; ESD inds, 2011).

An interesting indicators framework for social learning for sustainability in HEIs has been developed by Mulà (2011): It seeks “to assess whether universities lead, embed, enable, support and measure the impact of social learning for sustainability” (*ibid.*, p. 298), and is based on self-assessment and benchmarking. The framework focuses on staff engagement and assesses the contextual as well as structural conditions, but not the quality (or depth) of a social learning process itself. Dlouhá *et al.* (2013) offer an indicators set to describe social learning processes with regard to regional sustainability, tested in university-based regional centres of expertise for ESD. This set represents a kind of checklist for self-assessment and in which respondents have to reflect on diverse aspects and impacts related to social learning in their projects. The set considers, for example, the diversity of stakeholder groups, the application of different learning approaches and levels of participation (from informing to decision-making), and aims thereby to foster double-loop learning (*ibid.*). Sipos *et al.* (2008) analysed several pedagogies that relate to sustainability and transformative education and elaborated a matrix for programme evaluation following a division of learning objectives into the categories of *head*, *hands* and *heart*, striving thereby to embody the learning theories regarding transformative learning. The present research aims to build on these insights and to develop them further by focusing on the quality aspects of participatory processes for sustainability implementation, as these have been less considered (Tilbury, 2011). Furthermore, the qualitative approach of this investigation can add new empiric perspectives for SA and HESD.

III.8 Methods – developing assessment criteria for participatory processes in sustainable universities

The data collection method used as part of this work had two main objectives: (i) to identify critical success factors of participatory processes in sustainability initiatives, and (ii) to identify possible assessment criteria. As the amount of data collected was very large, the authors decided to divide the analysis into two major topics according to the previously defined objectives. Disterheft *et al.* (2015b) (see III.1-III.6 in this thesis) present the results concerning critical success factors and include a detailed description of methods, considering as well related questions of reliability and validity. This paper, in contrast, deals with the identification of possible assessment criteria and resumes the methods in a shortened way that still allows an easy understanding of the procedures.

Inspired by the Delphi-method (Linstone *et al.*, 2002), the data collection was divided into two consecutive phases, consisting, first, of expert interviews (N=15) and, second, of two focus group discussions (N= 20) and two semi-structured interviews (N=3) (see appendix A1-A13 for the materials used, e.g. respective interview guides for the semi-structured interviews and focus groups). The latter interviews were executed with participants from two further focus groups held within this project, but in which the discussion about assessment criteria could not be completed due to time constraints of some other participants. As experts were considered persons working in higher education and engaged in sustainability implementation for more than two years, namely sustainability coordinators, lecturers, researchers and student activists.

III.8.1 First data collection: semi-structured expert interviews

For the first data collection, a semi-structured interview method was chosen to obtain rich and varied data (Bryman, 2012) that would allow comparing different cases of sustainability initiatives involving different stakeholder groups. One part of the

interview was about sustainability assessment tools⁸ and the interviewee's experience with them (see Table III.1 for a detailed interviewees' profile), exploring whether and how participation is or can be better included in assessment practices for sustainability.

A list of quantitative and qualitative assessment criteria could be retrieved, and was then prepared to be discussed in focus group discussions for deeper exploration (Bryman, 2012).

III.8.2 Second data collection: Focus groups and semi-structured interviews

For the second data collection, focus groups were considered the most appropriate method, because this method allowed to address best the following objectives:

- To investigate further how the participants perceive the list of assessment criteria previously obtained,
- To complete the previous data by integrating further aspects and additional criteria generated in the discussions,
- To analyse how the utility and practicability of quantitative and qualitative criteria in these contexts are understood, (
- To be open for new emerging patterns.

The focus groups were set up during academic meetings and conferences related to *Education for Sustainable Development in Higher Education* (European Virtual Seminar (EVS) Meeting 2013, Sinaia, Romania) and *Sustainability in Universities* (ESCR-EMSU 2013, Istanbul, Turkey). Two focus groups were transformed into one interview in pairs and into one individual interview, due to time constraints of other participants. The interviews were held during the Regional Centres of Expertise on Education for Sustainable Development (RCE) Meeting 2013, Kerkrade, Netherlands, and in a

⁸ For a better contextualization and understanding, the interviewees were shown a list of eleven assessment tools applied in the university context, namely AISHE, CSAF, GASU®, STARS, STAUNCH®, Sustainability Report Card, Ecological Footprint, EMAS, ISO 14001, ISO 26000, GRI (for further details see Disterheft *et al.*, 2012a and appendix A5). The interviewees only responded about those tools they have experience with.

German university that is considered a pioneer in holistic sustainability implementation. The participants (N=23) were represented by 57% female and 43% male; were mostly in the age group 30-39 and 40-49 years (39% and 26%, respectively) and pursued mostly a postgraduate degree (48% with PhD, 48% with a master, 2% with a bachelor). The groups were composed of 8-12 participants and one moderator (first author), with a relatively homogenous distribution of gender, age and working experience between the different groups (Table III.6).

At the beginning of the discussion, the participants were introduced to the scope of the study and discussed first critical success factors for participatory approaches⁹. In the second part, a list of possible assessment criteria, previously obtained from the interviews of the first data collection, was presented and put into debate. Additionally, a quote from a previous interviewee regarding qualitative versus quantitative assessment approaches was used for further stimulating the discussion (see appendix A10 and A12).

Table III.6: Composition of focus groups

Focus group (FG)/ Expert interview (Exp.Int.)	Group	N	Nationalities and gender (f=feminine, m=masculine)	working in sustainability (average in years)
FG1	n/a	8	Romanian (f/m), German (f/m), Austrian (m), Dutch (m), Portuguese (f), Greek (m)	8
FG2	A	6	Belgian (f/m), British (f), Swedish (f), Canadian (f), Dutch (m)	8
	B	6	French (f), Belgian (f), British (f), Mexican (f/m), German (m)	
Exp. Int. I	n/a	2	Austrian (f), Greek (m)	5
Exp. Int. II	n/a	1	German (f)	12
total N		23		8

⁹ As this part is not subject of this paper, please see Disterheft *et al.* (2015b) for further details.

III.9 Data analysis

Interviews and focus groups were audio / video recorded, transcribed, anonymised and coded, following a qualitative content analysis approach (Mayring, 2000, 2010), with the support of qualitative data analysis software NVivo 10. Additional materials for the analysis comprised pictures and field notes. A focus was set on similarities and differences as well as on aspects highlighted by the participants, in order to identify trends and relations. In this sense, concrete citations were chosen from the data in order to represent aspects that were expressed by several participants or groups.

III.10 Findings and discussion

The interviewees from the first data collection generally agreed that aspects of participation are or can be included somehow to existing assessment tools, but that the existing assessment approaches are rather limited, causing frustration to several of the respondents:

I understand that the rating systems have to have questions to get added things, but it doesn't leave a lot of room for just telling the story what's really happening. [Sustainability coordinator, f, US-American]

(...)This is not something STARS is going to pick up on: "Yes, of course, we have students at the table", or 'are there students at the table and they're heard'. They are one of the most valuable people at the table. [Professor, m, US-American; referring to retrofitting project that followed a participatory approach, engaging the whole academic community]

So you can have a policy [e.g. ESD policy] and say 'We're going to do this', not do anything, get maximum points, and actually do it [without having a policy], lead the change and get no points. So, we do report under the Green League, but I think it's a farce, quite frankly. It's very poor methodology. [Lecturer, m, British]

The interviewees suggested diverse assessment criteria and referred to positive outcomes and benefits that they attributed to participatory approaches, which can eventually be transformed into further assessment criteria. These criteria were divided into quantitative and qualitative (Table III.7).

Table III.7: Preliminary assessment criteria for participatory processes in sustainability initiatives in HEIs (results from the first data collection)

quantitative	qualitative	
<ul style="list-style-type: none"> • Economic savings • Number of participants • Number of events / workshops etc. • Long-term perspective • Inter-and transdisciplinary (number of different department / faculties etc. involved) 	<ul style="list-style-type: none"> • Striving at innovation • Striving at knowledge sharing • Evaluation of what happened as a result of the initiative • “The quality of the shift of the way we do things at the college” • Inter-and transdisciplinary (quality of the collaboration) 	
Outcomes and benefits		
<ul style="list-style-type: none"> • Employability of students • Number of participants as multipliers / champions for sustainability • Positive image of the university 	<ul style="list-style-type: none"> • More dialogue • Better networking • Confidence • Collaboration • Empowerment 	<ul style="list-style-type: none"> • Increase of acceptance • Optimism • Avoiding resentments • Capacity building

Overall, the interviewees considered more qualitative approaches necessary in sustainability assessment, when aiming to include dimensions of participation:

So, traditionally, the government tends to use criteria like ‘how many people attended?’ or ‘how many workshops were held?’, ‘how many locations were they held in?’...very linear, kind of meaningless evaluations... statistics. More meaningful data might be ‘what actions resulted from the commitments by the participants during the sessions, ‘what connections with other participants were made?’, the more non-linear, networking kind of evaluation. [Lecturer, f, Australian]

Table III.7 as well as the last quote was put into debate in the focus groups executed during the second data collection (see appendix A12) and allowed to complement the previous analysis with further insights. Participants discussed inter alia divergently about economic savings related to participatory approaches for sustainability: some persons considered options for saving due to more effective decision-making, and others pointed to the higher costs on the short term due to extra investments needed for sustainability implementation. General agreement prevailed

about inter- and transdisciplinarity as an assessment criterion, with a tendency to a more qualitative perspective that would evaluate the quality of collaboration. The list about positive outcomes and benefits was less present in the discussion, possibly due to time constraints and already many further aspects having been added. The participants distinguished in particular between process and outcome, and organised the criteria into these groups, expanding them with additional criteria. Emphasis was put on the quality of the process itself and on a qualitative approach to assessment:

In 'process indicators' we added not as 'how many persons participated' but the depth of participation, so how meaningful did people participate, the breadth of participation. [FG2_B_f]¹⁰.

Another group added the aspect of representativeness over time and during different stages of a process:

Then, depending also on what your topic is, you have to include people from other disciplines, let's say, but it would not be good to measure it quantitatively, it's not like, 'ok, we have five faculties involved', or something, and that's good, - no, it depends, on what you have been talking about (...), so we didn't like really the quantitative things like 'how many persons participated', we don't find that relevant, we want to know whether the relevant groups were included, and whether they were included throughout the whole process, like in the beginning, in the middle and also in the end, like not [only] the one nice event where everybody showed up (...). So more like the relevant people were there, and they were there the whole time. [FG2_A_f]

All groups underlined the importance to deal constructively with expectations, conflicts and failures, being some pessimistic about the university context and frustrated based on their own experience. In order to avoid frustration, it was suggested that expectation- and failures management should be included in the assessment:

¹⁰ The code refers to the focus group compositions of Table 2, indicating first the specific number of the focus group, then the subgroup where applicable (A or B) and, third, the gender of the participant (m= masculine, f= feminine).

So I think, an important thing is the expectation management; to be very clear on what is possible, what is not, what can people expect and what not. That is an important thing. [FG1_m1]

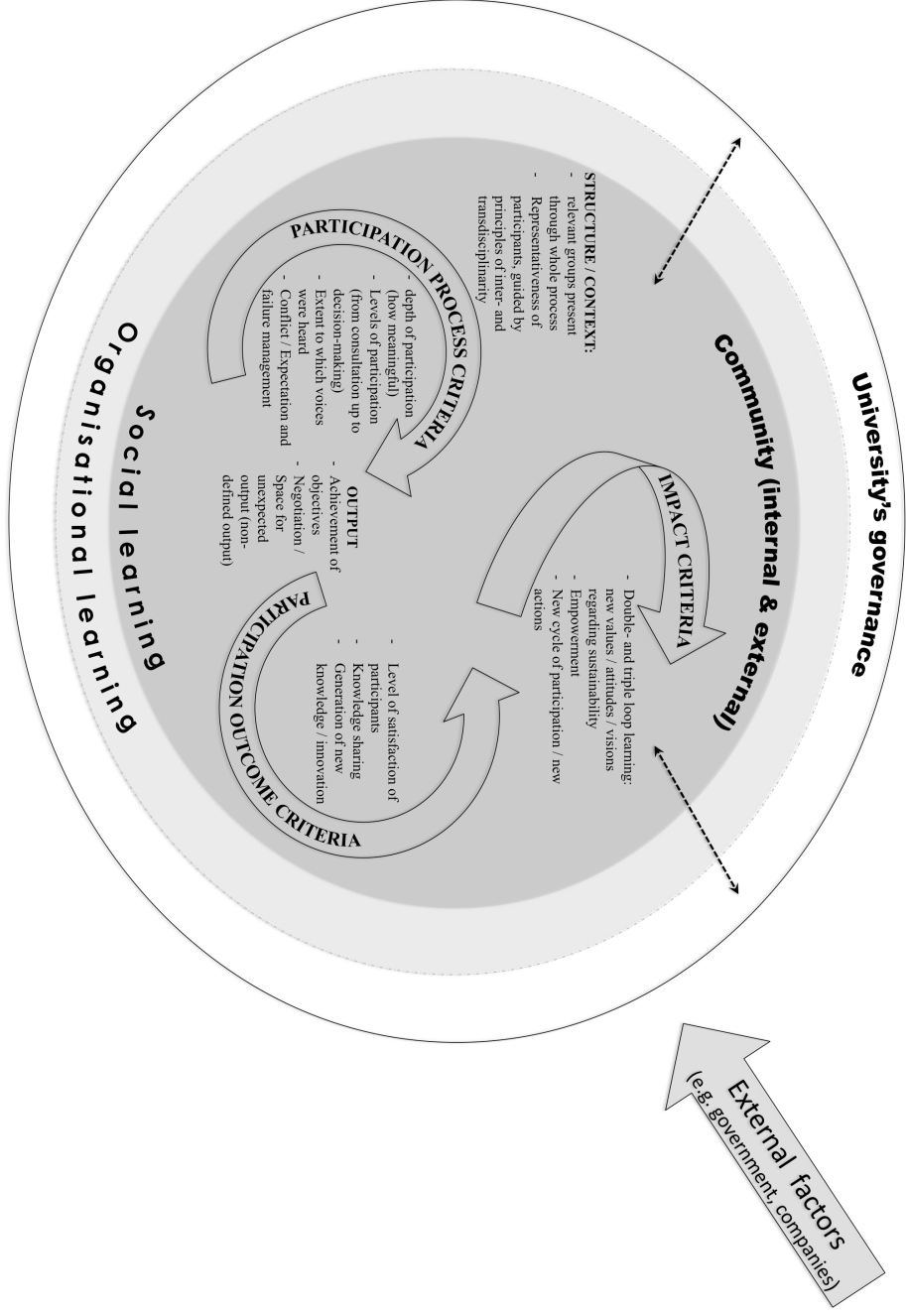
(...) Expectation management - I like it very much, it should be included and I would say also possibly failure management, because failure is an option. [FG1_m2]

In a similar sense, it was underlined that the output of a participatory process might be different from initial plans and could therefore remain undefined. Assessing the achievement of previously defined objectives needs therefore to leave space for *negotiation*.

The division of participatory approaches into process, output and outcome, with different criteria for the different stages, suggests a perception of participatory processes in forms of cycles or loops that succeed each other. This perception was reflected in the light of learning theories and translated into a schematic representation of assessment criteria for participatory approaches (Figure III.6).

Ideas related to **process and output criteria** were described above. In the category of **outcome criteria**, the focus group members placed e.g. the *level of satisfaction of participants*, highlighting that a link between their contribution and the outcome should be identifiable. As an additional criterion, it could be looked at *new knowledge/innovation* that was generated due to the previous process. Furthermore, it was suggested that one process might lead to *new processes of participation*, connected to the idea of *empowerment*. This new cycle would therefore result from a learning process in which reflection about personal values and assumptions took place and participants feel empowered to undertake new actions towards sustainability, leaving therefore an **impact in the academic community**.

Figure III.6: Schematic representation of assessment criteria, organized in cycles of a participatory process and interdependent with the university system



In order to embed these findings in the theoretical context, the cycles of participation illustrated in Figure III.6 are linked to the dimensions of social and organizational learning which boundaries are understood as being permeable, influencing each other on diverse levels. Participants in this research emphasized to look at ‘the quality of the shift how things are done [at the university]’ (Table III.7), as well as on the depth and meaningfulness of participation, and underlined the necessity of emerging new values, with a focus on empowerment that in turn may lead to new cycles of participation. This perception can be related to double- and triple loop learning, as described by Argyris and Schoen (Argyris *et al.*, 1996) (Figure III.4), and as also defended by Vare *et al.* (2007). The latter apply this kind of learning to ESD, and point out: “In ESD2¹¹, we can’t measure success in terms of environmental impacts because this is an open-ended process; outcomes will depend on people’s unforeseen decisions in future, unforeseeable circumstances. But we can research the extent to which people have been (...) enabled to think critically and feel empowered to take responsibility” (ibid., p. 194). If these reflections go beyond individual values and start being embedded in the academic community, social learning is taking place (Reed *et al.*, 2010). If the university’s governance also adapts to these ongoing changes and incorporates new values at institutional level, one can speak of a learning organization (Senge, 1990). These aspects are to be understood as interdependent: The university’s governance structure provides the *context*, which has a strong impact on the overall process conditions (e.g. these structures reflect the space and time provided for participation and learning of the academic community, defining or at least influencing who can participate to what extent. They also demonstrate the overall support and authentic interest shown by the university’s top management (or its absence) (Disterheft *et al.*, 2015b). At the same time, outcomes and impact of participatory

¹¹ These authors distinguish between ESD1 and ESD2, understanding the first as “the promotion of informed, skilled behaviours and ways of thinking, useful in the short-term where the need is clearly defined”, and the second as a “building capacity to think critically about what experts say and to test ideas, exploring the dilemmas and contradictions inherent to sustainable living” (Vare *et al.*, 2007, p. 191). ESD2 is perceived as a complement to ESD1, as it would add more loops of learning.

processes can lead to change in the university's governance and rebalance distorted power relations (Wals, 2014; Wals *et al.*, 2002), e.g. through new emergent bottom-up processes, and contribute therefore to organizational learning.

The call for transformative learning, made by many ESD scholars and other sustainability practitioners (Moore, 2005; Sipos *et al.*, 2008), can also apply to sustainability assessment. As participatory approaches for sustainability are associated to change, in the assessment of these processes it could be reflected about what kind of learning loops (Figure III.4) were fostered, and to what extent values and worldviews were challenged. Moore (2005) rightly asks whether higher education is ready for this kind of learning, as transformative learning is very complex and requires specific training and support, for educators as well as for students. A skillful facilitator therefore seems indispensable, as suggested already in the previous analysis of this research (Disterheft *et al.*, 2015b), and that person would also have the adequate role to help balancing divergent expectations and dealing with eventual drawbacks or even failures.

The need of negotiation about objectives, leaving the outcomes previously undefined as underpinned by the focus group members, promotes in particular a quality of the learning experience that can also be seen as aligned to the understanding of deep democracy. Prescribed forms of worldviews and lifestyles should be objected, as explained by Wals (2010a), and can point indirectly to Dewey's picture of a "democratic public" (Dewey, 1916, p. 87) that he sees as "the process of deliberation and communication over collective goals" (*ibid.*).

Existing social learning indicators as presented by Dlouhá *et al.* (2013), or the Graz model for integrative development in HEIs by Mader (2013), include the differentiation of levels of participation (Arnstein, 1969) and point therewith to the importance of using participatory approaches not only for informing or consulting, but for truly engaging by attributing decision power to participants. This democratic understanding of participatory approaches is also reflected in the present findings and can be seen as an argument for including the political dimension of participation into sustainability assessment practices. This inclusion could enhance diversity and pluralism of thought,

and in the end contribute also to new knowledge generation: “Grasping something of the other’s point of view, one grasps something of one’s own limit. The result, paradoxically, is not a diminution but an expansion of knowledge” (Meggill (1995, p.35) in Wals, 2010a). By highlighting space for negotiation and new knowledge generation as assessment criteria, the participants in this study seem to be supportive of this perception.

The current developments in the academic landscape of industrialised countries (referring in particular to the European context from where the authors are coming from), do not generate optimism for a sustainability transition that endeavours empowering its academic communities: Many HEIs have been facing enormous financial cuts; students are confronted with raising tuition fees; there is a growing trend of performance evaluation based on mainly economic aspects in terms of efficiency, and quality seems to be equalised with productivity in terms of numbers of publication, or with number of students enrolled; and social security is decreasing for HEIs’ employees (teaching and non-teaching staff), impacting significantly on motivation and satisfaction (Schuetze, 2012; Wilson, 2013). At first sight, participatory approaches for sustainability implementation in the university context and reflections about their assessment may therefore not appear to be a priority topic when looking at the challenges ahead. But participatory approaches offer a great opportunity for rethinking and recreation of practices and underlying values, including the possibility to construct together a new meaning for ‘sustainable university’, which would be urgently needed for a paradigm change. Reflecting about what a sustainable university constitutes, Wals (in Sterling *et al.*, 2013, p. 26) suggests:

“A sustainable university is a university that contributes to the quality of life and the well-being of the planet through its education, research, management and community outreach. Doing so requires continuous critical scrutiny of its own assumptions, values and practices. Since ‘quality of life’ and ‘well-being of the Planet’ are contested and dynamic concepts a sustainable university has a fundamental role to play in recalibrating their meaning as the world changes and new knowledge and insights emerge. Despite progress in recent years, this ideal remains a core challenge for most universities.”

HEIs are challenged to engage better their academic communities in this transition process towards sustainability. It appears to be more difficult to develop criteria and indicators for shaping and assessing this process than to formulate desired outcomes (Tilbury, 2011), but the findings of this research propose that combining double- and triple loop learning with democratic principles can provide orientation for designing and executing participatory approaches. It is therefore intended with this research to contribute to the ongoing debate about sustainability in higher education. A better integration of the dimensions of participation into sustainability assessment practices can help in defining and establishing participatory approaches on institutional level, fostering a culture of participation in the transition to sustainable universities. The criteria or future indicators, to be used for assessment, would require, however, being adaptable to the specific context and should be agreed on by the participants involved. Thereby, cultural circumstances and different perceptions of importance or urgency of certain issues could be considered and respected more adequately. It is intended to use the present findings, in particular from Figure III.6, to develop an indicators set for participatory processes in sustainability initiatives in the forthcoming research phases.

III.11 Conclusions

The linkages between participation and sustainability implementation, complemented with the sustainability assessment, form the starting point for this ongoing research.

The data collected from the study suggests in particular the need for paying more attention to the learning dimensions when aiming to assess participatory approaches directed towards sustainability implementation in HEIs, considering as well deep democracy; i.e.:

- (1) The level of participation (avoiding simply consulting and emphasizing engagement in decision-making and empowerment),
- (2) The scope of participation in terms of representativeness of diverse stakeholder groups (stressing inter- and transdisciplinarity)

(3) The quality of the process in terms of

- stimulating systems thinking, critical thinking and reflecting about values
- providing space for negotiation of goals and outputs
- analysing the level of satisfaction of participants
- sharing existing and generating new knowledge

(4) The impact of participation in terms of new, preferably shared, values and disposal to join a new cycle of participation

Sustainability assessment does not yet give much attention to which extent initiatives foster transformative learning and critical thinking. The concept of participation offers possibilities for transformative learning to take place and to incorporate its assessment in a more holistic manner. The study confirms previous calls for more qualitative, non-linear assessment in order to address more adequately the complexity of sustainability implementation in higher education.

As the present study is based on subjective experiences of a relatively small sample group, the findings can be considered neither complete nor representative, and are to be understood as suggestions for further reflection. Even though the study is internationally orientated, with participants coming from seventeen different countries, the geographical scope is still limited and cultural aspects are not taken into consideration.

Future research could explore in more detail differences between stakeholder groups in HEIs (i.e. students, teaching and non-teaching staff, relevant external groups), as well as investigate more deeply systems thinking and transformative learning. Furthermore, the inclusion of the natural world (Jones, 2013; Kopnina *et al.*, 2014) into participatory approaches for sustainability and their assessment, as exposed in the Earth Charter (Earth Charter Initiative, 2010), could offer valuable qualities in order to reflect better a truly holistic understanding. As this is an continuing study, these aspects are to be included in following research phases.

This study brings the sustainability debate in higher education further by strengthening the learning and transformative aspects in sustainability implementation processes. These aspects are not only applied on students as being the change agents and future decision-makers, but on all members of the academic community and the university itself as an institution in transformation. By focusing on the qualitative aspects and more holistic approaches that participatory processes in sustainability implementation offer, the 1st principle of the Higher Education Sustainability Treaty from Rio+20 is underlined (Copernicus Alliance, 2012): “#1 To be transformative, higher education needs to transform itself”.

IV. Designing a new model

The INDICARE-model – measuring and caring about participation in higher education’s sustainability assessment

A shorter version of this chapter was accepted in the journal Ecological Indicators:

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Abstract

The implementation of sustainability in higher education has been advanced over at least the last two decades and brought sustainability assessment on the research agenda of Education for Sustainable Development (ESD) and sustainability science. Participatory approaches have gained increasing attention in these endeavours, but remain often vague and less addressed in sustainability assessment procedures. To fill in this gap, an indicator-based model, INDICARE, was developed that can assist in assessing participatory processes within higher education’s sustainability initiatives. The objective of this paper is to introduce and discuss the model’s theoretical background, its structure, applicability, and how it can broaden the perspectives on participation and sustainability assessment in the university context.

Embedded in a mixed-methods research design, the model was developed in iterative stages and was discussed and adjusted along six feedback loops, having been presented to 98 persons during conferences, workshops and university meetings. Inspired by biophilic ideas, transformative learning theories and participatory evaluation, INDICARE follows an ecocentric and integrative perspective that places the earth and its community at the centre of attention. A preliminary set of thirty-two indicators and practices, grouped in three categories of context, process, and transformation, is proposed. The assessment process itself is considered as a thought-provoking exercise rather than as a control tool and emphasizes the interplay of personal reflection and action-oriented outreach. INDICARE intends to invigorate the

sustainability debate in higher education, in particular by proposing a more holistic approach to assessment that underlines experiencing the interconnectedness of human-nature relationships, combined with reflective exercises that can respond better to the call for transformation on individual and institutional level.

IV.1 Introduction

The debate about the implementation of sustainability principles and values into higher education (HE) has been growing over the past twenty years, and an increasing number of universities have engaged in this implementation process in the most varied ways (Barth, 2013; Beringer *et al.*, 2008; Lozano *et al.*, 2014). Reinforced by plentiful international conferences and the recent UN-Decade *Education for Sustainable Development (ESD)* (2005-2014), a specific research field about sustainable universities has emerged (Beringer *et al.*, 2008; Karatzoglou, 2013; Leal Filho *et al.*, 2015; Yarime *et al.*, 2012b). Attempts are being made to distinguish different types of sustainability in HE projects, e.g. categorizing them into (i) greening the campus initiatives / campaigns, with a focus on operational improvements (eco-efficiency), (ii) revision of learning outcomes and curriculum reformulation and (iii) institutional research and development projects, including community outreach (Beringer *et al.*, 2008). However, despite much progress, sustainability has not become yet an integral part of the university system (Lozano *et al.*, 2013a) and further research is needed to tackle the complex challenges and demands within a transition to sustainable universities (Stephens *et al.*, 2010).

Within this debate, participatory processes are seen as valuable for a paradigm change towards sustainability, as they can contribute towards the debate about how to integrate the sustainability concept into the university culture (Disterheft *et al.*, 2013a; Sterling, 2004). The concept of participation touches areas of institutional governance, social learning and organisational learning, but is presently vaguely defined and is not contextualized yet to sustainability in HE (Barth *et al.*, 2013a). Universities tend to focus on social participation, such as volunteering, and distinguish

less between other forms, such as individual or public participation that would also include political dimensions (e.g. voting and direct involvement in decision-making) (Disterheft *et al.*, 2012a). So far, there have been comparatively few research studies on participation within sustainability implementation at university level, and a more differentiated understanding of these processes is still missing, both in practice of conducting a participatory process as well as in assessing their potential for individual and institutional transformation.

Monitoring and assessment have become part of the sustainability debate in HE. Initiated by the demand of the United Nations to develop sustainability indicators, and as a follow-up of the Earth Summit 1992 in Rio de Janeiro for tracking progress of Agenda 21 (Bell *et al.*, 2008), specific tools and rankings have been developed for sustainability assessment in universities (e.g. STARS, AISHE, GASU, among others, see Disterheft *et al.* (2012a) and Lauder *et al.* (2015) for an overview). While these tools and rankings aim to improve the institutional performance and to make communication about sustainability easier and comparable (Ramos *et al.*, 2010), having boosted certainly the sustainability discourse in HE, they have also been criticised for their reductionist approaches (Bell *et al.*, 2008; Bond *et al.*, 2011). Concerns were expressed that sustainability assessment practices in HE run the risk of catering more towards market demands than to societal needs and transformative change, in particular when they focus on competitive benchmarking and quantitative oriented ranking systems (Fadeeva *et al.*, 2010; Jones, 2012). Critical voices analyse the impacts of university rankings, e.g. that these lead to hierarchically ordered knowledge creation “[reinforcing] the elite institutions and a handful of countries as the primarily knowledge producers” (Hazelkorn, 2014, p. 42). Furthermore, by giving the appearance of scientific objectivity, these rankings also contribute to “a set of (...) hegemonic ideas”, reflecting “global power struggles about who (which countries and institutions) should participate in world science” (ibid.).

Instead of following a mechanistic paradigm, in particular ESD indicators or metrics should stimulate transformative learning processes and be transferrable into local knowledge (Bormann, 2007; Tilbury, 2011), encouraging critical thinking and reflection

on ethics and values (Barth *et al.*, 2013a). There are also concerns that indicators e.g. might simply “serve as legitimization and/or as a means for rational problem solving (...), which would not correspond to the second-order-character of ESD” (Bormann, 2007). In other words, indicators may not lead to the reflective attitude intended in transformative initiatives, such as ESD, and represent rather a new form of control instead of critical reflection. The purpose and focus of indicators has been vigorously debated, in particular whether the indicators should be quantitative or qualitative oriented (Tilbury, 2007), and whether they attend more to the mechanistic or to the ecological paradigm (Bormann, 2007). Knowledge transfer is another challenge, as well as the usability of all the data collected, as some of the information gathered might simply end on “data cemeteries” (*ibid.*, p. 11).

Although sustainability indicators and ESD indicators share the main purpose to report about sustainability, there are important differences between these two groups: ESD indicators emerged from SD indicators with a specific educational mandate that is based on interdisciplinarity, multi-perspective and participation (Reid *et al.*, 2006; Rode *et al.*, 2008). The dimensions of participation are yet to be further explored, even if it has been started to some extent through social learning indicators (Disterheft *et al.*, 2015a; Dlouhá *et al.*, 2013; Mulà, 2011). Nevertheless, measurement and assessment are generally still underrepresented in ESD literature (Karatzoglou, 2013), which made it necessary to enlarge the field of consultation. The call for transformative learning, made by ESD scholars and other sustainability practitioners (Moore, 2005; Sipos *et al.*, 2008), can also apply to sustainability assessment. As participatory approaches for sustainability are associated to change, within the assessment of these processes it could be reflected about what kind of learning loops (Argyris *et al.*, 1978, 1996) were fostered, and to what extent values and worldviews were challenged.

This research is embedded in an ongoing mixed-methods study focusing on participatory approaches within sustainability initiatives in HE with the overall objective of developing an assessment tool for these approaches. Primarily, qualitative methods were applied, having used semi-structured interviews and focus groups with

a total of 51 sustainability practitioners in HE from 22 countries. Critical success factors and possible assessment criteria for participatory processes within sustainability implementation in HE were explored. Findings from these previous research phases align with the observations outlined above and associate higher education for sustainable development to empowerment and capacity building (Disterheft *et al.*, 2015b). In terms of assessment, the findings (Disterheft *et al.*, 2015a) suggest that participatory approaches could be better assessed from a social learning and organisational learning perspective (Cebrián *et al.*, 2013), emphasizing non-linear criteria for the quality of the process in terms of depth and meaningfulness, underlining as well the high impact of institutional governance.

Following the previous findings, deep reflection on an exhaustive literature review, and a research gap for holistic and transformative approaches, an indicator-based model for assessing participation in HE's sustainability implementation was developed. The development of this model was incited by the call of several sustainability research scholars for exploring "new models of engagement to facilitate collective visioning and change toward sustainability amongst different university actors" (Jones, 2013, p. 157 based on Stephens *et al.*, 2010) and "to identify and assess different models of university- community engagement" (*ibid.*, p. 158). McEwen *et al.* (2010, p. 43) observe a research lacuna on "how to facilitate institutional learning for transformation". A major aim is to offer a more holistic approach by focusing on the quality and transformative character of the participatory process in terms of learning, sharing and new knowledge creation. The suggested indicators in this model intend not only to assist in assessing participation in the transition to (more) sustainable universities, but also to contribute positively to the ongoing debate around sustainability in HE and to encourage especially new perspectives on the dimensions of participation. The model was named INDICARE (read [indi'kare]), standing for indicators or practices that rather *care* than judge and rather stimulate than strictly measure. The model focuses on assessing the quality of the participatory process and on the opportunities of transformation in form of learning, sharing and new knowledge creation that can emerge through the process, following mostly a self-

assessment approach. Since a cultural crisis of perception of the human-nature relationship can be seen as the principal cause for unsustainability (Beringer *et al.*, 2008; Orr, 2004), INDICARE follows an ecocentric approach (Glasser, 2004; Imran *et al.*, 2014), exploring ideas related to the biophilic university (Jones, 2013).

The main objective of this paper is to introduce and discuss INDICARE, its theoretical foundations, purpose, structure, and applicability, wishing thereby to invite further debate on this research.

First, the theoretical framework will be presented. The authors start with contextualising participation to the university context and refer then to the fundamentals of the model, namely an integrative ecological worldview and theories about transformative learning. Then, the methodical approach is resumed, followed by the detailed presentation of the model's structure and its indicators, finishing with a summary of the feedback loops the model went through. The fifth section discusses the model and reflects on practical implications, possible limitations and drawbacks. The paper concludes with an outlook.

IV.2 Theoretical context

As one of the typical characteristics of sustainability related research, often numerous theoretical concepts are used and linked to each other. As this paper is based on an ongoing mixed-methods study, using a relatively broad area of concepts deriving from social theories, only the most relevant aspects for substantiating theoretically INDICARE are referred in this section. Further related concepts such as governance, higher education for sustainable development, sustainability assessment and stakeholder theory are dealt in more depth elsewhere (Disterheft *et al.*, 2013b, 2015a, 2015b).

IV.2.1 Contextualising participation to the university setting

The concept of participation is vaguely defined, and, similarly to the concept of sustainability, different understanding and interpretations coexist. The concept itself

derives from theories about representative and participative democracy, theories about civil society, social networks and social movements. Some core aspects from these theories were identified along earlier stages of this research project (Disterheft *et al.*, 2012a):

- (i) the provision of space for voices of different stakeholders to associate are a critical component of democracy (Dahl, 1989);
- (ii) joining and taking part in local organizations helps to foster trust in others and to develop a sense of values (Putnam, 1995);
- (iii) the presence or absence of public engagement impacts on the quality of governance, democratic institutions and public life (Stoker, 2004).

Transferring these aspects to the university context, the different stakeholders (or alternatively “*interested parties*” to use a less economically coined term¹²) of a higher education institution would need to be provided the space and opportunity to take part in the shaping- and decision-making processes of their learning and working environment, namely the students, teaching and non-teaching staff and also external interest groups, e.g. neighbours, the local municipality, local organizations (e.g. NGO’s), companies and enterprises with links to the university. By providing this space and allowing active engagement, including the political dimensions, the academic community could gain benefits on personal and institutional level, e.g. more trust among the community members, developing a personal sense of belonging and better identification with the community, as well as increased transparent governance structures and therefore higher trust in the university itself.

From the educational policy perspective, ESD advocates the concept of participation as a transformative learning approach (Barth *et al.*, 2013a; UNESCO, 2011) as well as a form of institutional transformation (Copernicus Alliance, 2012). The ideas about participation are linked to sustainability literacy (Stibbe, 2009), as well as to the ethical and social learning perspectives of stakeholder engagement processes, e.g. fostering

¹² For a critical reflection on the term ‘*stakeholder*’ see Mackay (2006).

citizenship and democratic values. Scholars noticed a shift from environmental sustainability to pedagogies, competencies, community outreach and partnerships (Barth *et al.*, 2013b; Wals, 2014). Furthermore, a whole-institution approach is promoted (Disterheft *et al.*, 2015b; Fadeeva *et al.*, 2014a) that would “encourage a participative culture around sustainability in higher education” (Fadeeva *et al.*, 2014a, p. 14). However, scholars point also “to the dangers and risks in practicing participation unreflectively” (Fischer, 2012, p. 3), because “participation became (at least partially) an object of celebration, trapped in a reductionist discourse of novelty, detached from the reception of its audiences and decontextualized from its political, ideological, communicative-cultural and communicative-structural contexts” (Carpentier, 2009, p. 407).

Based on the theories and concepts mentioned above, the authors developed a working definition for participation at the beginning of the research project and within the context of ESD in Higher Education (Disterheft *et al.*, 2015a) which was amended after reflecting on the findings from the previous research phases and adjusted for INDICARE to the following:

“By participatory processes within sustainability initiatives we understand the engagement of all critical stakeholder groups / interested parties into a deliberative process design to define goals, responsibilities and actions toward the transition to a more sustainable university now and in future. A participatory process directed towards sustainability recognizes the interdependence of human-nature systems, thriving for personal and collective development through diverse forms of knowing that include the cognitive, emotional and aesthetical dimensions, making space for holistic experiences that can stimulate reflection, critical thinking and a caring attitude towards the human-nature systems.”

By emphasizing diverse forms of knowing and a caring attitude toward human (societies) and natural systems (ecosystems) simultaneously, it is intended to express a holistic understanding of participatory processes and to call for a reflective attitude towards our personal sense-making of the world. The perception of human-nature systems is closely linked to underlying worldviews that can be looked at from different perspectives.

IV.2.2 Integrative worldview following an ecocentric perspective

Worldviews describe how we perceive reality and inform our understanding and interpretation toward this reality. The concept of worldview, deriving from the German term *‘Weltanschauung’* and first extensively dealt with by Immanuel Kant in 1790, can here be referred to only in a very limited way, due to its complex philosophical, psychological but also sociological and political meaning. Within the sustainability context, reflecting on worldviews is highly relevant, since “they tend to shape how individuals perceive particular (ecological) issues and their potential solutions, [and] they also tend to influence their willingness to partake in such solutions themselves, as well as their (political) support for addressing the issue socially” (Hedlund-de Witt, 2012). In her integrative worldview framework (IWF), she explains that worldviews are formed by five aspects, namely our ontological, epistemological and axiological understanding as well as our anthropological perspective and societal vision (ibid.; Hedlund-de Witt, 2013).

Leopold (1949) saw as a main problem for the continuous environmental degradation and resulting complex environmental and social crises of our times the modern conception of separating the self from nature, a conception also referred to as the Cartesian worldview (Lozano *et al.*, 2013a) in which feelings of resonance and a sense of relatedness to the natural world got lost. Similarly argues Orr when criticizing this Cartesian worldview:

“Descartes and his heirs simply had it wrong. There is no way to separate feeling from knowledge. There is no way to separate object from subject. There is no good way and good reason to separate mind or body from its ecological and emotional context. (...) Science without passion and love can give us no reason to appreciate the sunset, nor can it give us any purely objective reason to value life. These must come from deeper sources.” (Orr, 2004, p. 31)

These deeper sources may be suggested in Naess’ essay about the ecological self (Naess, 2008), in which he describes that one possibility to overcome the

anthropogenic environmental crisis is by maturing our self from ego to an ecological being in the world. Naess argues that, instead of excessively moralizing people and demanding more concern, more responsibility and more sacrifice for a better environment, people should be encouraged to ‘perform a beautiful act’ (within the meaning of Kant, *ibid.*) that results from feeling connected to the natural world:

“(...) we need the immense variety of sources of joy opened through increased sensivity toward the richness and diversity of life and the landscape of free nature. (...) Part of the joy stems from the consciousness of our intimate relation to something bigger than our ego, something that has endured through millions of years and is worthy of continued life for millions of years. The requisite care flows naturally if the self is widened and deepened so that protection of free nature is felt and conceived as protection of ourselves.” (ibid., p. 93).

In a similar line of thought falls E.O. Wilson’s biophilia hypothesis¹³ (Kellert *et al.*, 1995; Wilson, 1984), that serves as a basis to Jones to formulate the metaphor of a ‘biophilic university’ (Jones, 2013). He defines a biophilic university as ‘*a university which restores an emotional affinity with the natural environment*’ (*ibid.*, p. 151). This type of university would go beyond fragmented knowledge transfer and include in particular a type of engagement with sustainability not only from a performance-oriented and cognitive perspective, but also from an experiential, emotional and aesthetic angle. Including those angles would allow expanding “the process of knowing beyond its cognitive limits to all senses, reintroducing the body, the emotions, the affective mode of understanding, intuition, receptiveness, empathy, introspection and aesthetic understanding” (*ibid.*, p. 158). Jones uses the biophilic university as a metaphor for a starting point to discuss multiple interpretations of how a more

¹³The term biophilia is composed of the two ancient Greek terms *bio* (life) and *philia* (Glover *et al.*, 2011), which can be translated as the love or empathy to all living things. Kellert and Wilson (1995) define biophilia as the innately emotional affiliation of human beings to other living organisms. Innate means hereditary and is therefor part of the ultimate human temper, based on Wilson’s argument that emotional affiliation has developed over thousands of years of evolution and human-environment interaction.

emotional engagement with nature could look like in the university context, aiming to contribute to a more reflective paradigm. Orr coins the term “*biophilic revolution*” (Orr, 2004, p. 184), which he considers to be necessary to complement an “efficiency revolution” and a “sufficiency revolution” (ibid., 202). By ‘efficiency revolution’ he refers to the conversion of how and how quickly we use natural resources, concerning in particular technology and economics; the ‘sufficiency revolution’ is about our ideas how to live decently and concerns morality and human purposes. The biophilic revolution would combine “reverence for life and purely rational calculation by which we *want* to be both efficient and live sufficiently” (Orr, 2004, p. 203). For this to happen, he believes that simple respect for nature is “too bloodless, too cool, too self-satisfied “ (ibid., p.199) and that we should aim to go deeper, striving for “a transformation of one’s whole being” that would change one’s “loyalties, affections and basic character, which subsequently changes our intellectual priorities and paradigms” (ibid, p. 202.) Ecopsychologist Roszak sees the motivation for change to arise from within (Roszak, 2001), and Phelan (1992) explains that it is not about asking what to do or not to do to save nature, but instead to ask how do we understand ourselves and the world and how should we negotiate our relationship with ourselves. This negotiation and resulting perception of our relationship with all living creatures, including the natural world, can link us again to Naess’ ecological being in the world and lead to the ideas of systems thinking and connectedness of systems, denominated as the ‘web of life’ by Fritjof Capra (Capra, 1997). For Capra, a holistic or ecological worldview¹⁴ “recognizes the fundamental interdependence of all phenomena and the fact that, as individuals and societies, we are all embedded in (and ultimately dependent on) the cyclical processes of nature” (Capra, 1997, p. 6). Also for him, this recognition of interconnectedness does not derive simply by logic understanding, but

¹⁴ For Capra ‘holistic’ and ‘ecological’ refer both to an understanding of the world as a whole rather than dissociated parts, but for him ‘ecological’ is the more appropriate term in the sustainability context: In contrast to ‘holistic’, he argues that ‘ecological’ includes the embedment into the social and natural environment, emphasizing in particular the connections to the natural environment (Capra, 1997, p. 6).

by an ecological awareness that establishes a psychological connection between our worldview and our behaviour. He agrees with Naess that our experience of being part of the web of life would lead to a personal inclination – instead of obligation - to care for all of forms of living nature (Capra, 1997, p. 12). Reconnecting with the web of life means for him nurturing sustainable communities. Capra calls for a revitalization of communities, including educational-, business- and political communities, “so that the principles of ecology become manifest in them as principles of education, management, and politics” (ibid., p. 297). This manifestation, or the often-proclaimed paradigm shift as it is frequently called in sustainability literature, would involve asking deeper questions, and links the ideas outlined above to the theories of double loop and transformative learning, in which reflection and critical thinking are emphasized.

IV.2.3 Transformative learning and related theories

Several definitions for transformative learning exist (see McEwen *et al.*, 2010 for an overview), and even though they highlight different aspects, they share the common perception of a learning process that focuses on reflection and critical thinking and that allows a transformation of perspective. The theories around transformative learning have been coined by Mezirow, who has been influenced by the Freirian concept of ‘conscientization’ (Freire, 1972) and by Habermas’ theory of communicative action (Habermas, 1985). Embedded in adult education, transformative learning theory refers to a learning process:

“of becoming critically aware of one's own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation” (Mezirow, 2000, p. 4).

“The learner undergoes a conscious recognition of the difference between [the learner's] old viewpoint and the new one and makes a decision to appropriate the newer perspective as being of more value” (Mezirow, 1978).

Mezirow associates transformative learning processes to changes in our frames of reference, which are composed of habits of mind and points of view¹⁵ (Mezirow, 1997). Transformative learning theorists argue that these frames of references can be changed through critical reflection and “the expansion of consciousness through the transformation of basic worldview and specific capacities of the self “ (Elias, 1997, p. 7).

Although transformative learning was not linked initially to the ideas of social change and sustainability, it is now regarded as a concept that can take society “to the depth of things” (Sterling, 2011) and help “to transform our current ways of thinking and operating” (Stern, 2009 in *ibid.*, p. 19). Several scholars (Kopnina *et al.*, 2014; Wals, 2009a) see ESD or Education for Sustainability (EfS) as “an example of developing transformative education” (Thomas, 2009) and make links to systems thinking (Ferrer-Balas *et al.*, 2010; Sterling, 2011), social and organisational learning (Cebrián *et al.*, 2013; Wals, 2010b), experiential learning (Dieleman *et al.*, 2006) and communities of practice (Wenger, 1998; Wenger *et al.*, 2011). Together with the concept of double and triple loop learning¹⁶ (Argyris *et al.*, 1978, 1996), also referred to as ‘*second-order*’ or ‘*higher-order learning*’ (Sterling, 2011), these theories have been adopted within the continuous debate on how to advance ESD (Mader, 2013; McEwen *et al.*, 2010; Moore, 2005; Wals *et al.*, 2002), as they focus on systemic approaches that stimulate continuous reflection and enable changes in underlying values and assumptions. These theories are understood as helpful to tackle the complex problems of our times that universities and other institutions are confronted with (Edwards, 2009; Hansen *et al.*, 2006; Peer *et al.*, 2013; Peschl, 2007) and challenge existing worldviews, allowing new

¹⁵ Habits of mind are usually broad and influence the habitual way of our thinking, which then become articulated in a specific point of view. A point of view refers to the constellation of belief, value, attitude and feeling that shapes a particular interpretation (Mezirow, 1997), e.g. superiority of human beings over other living-beings as a habit of mind and technology-driven solutions as a point of view to solve resource scarcity. Whereas habits of mind are more durable and harder to change, points of view are more accessible.

¹⁶ See Disterheft *et al.* (2015a) for a deeper discussion on double and triple loop learning.

visions to emerge. These new visions are needed for the transition to a sustainable paradigm and to make our societies more resilient in a way that societies can better respond to the complexities and uncertainties lying in current and future challenges. Several authors (e.g. Dieleman *et al.*, 2006; Sterling, 2011) follow a similar line of thought about the ideas of a biophilic university (see above), and underline the necessity of going beyond cognitive approaches, emphasizing the importance of emotions and intuitions to understand complex systems. In this sense, O’Sullivan (Sterling, 2011, p. 20) describes transformative learning as:

“a deep structural shift in the basic premises of thought, feelings and actions. It is a shift of consciousness that dramatically and permanently alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-location: our relationships with other humans and with the natural world.”

These aspects align with the previous section in so far that transformative learning links to experiencing and becoming aware of the interconnectedness of systems through several ways of knowing (cognitive, emotional, aesthetical) and that foster reflective and critical thinking. Some authors describe concrete experience with transformative projects towards sustainability in universities and link them to curriculum reorientation (Sibbel *et al.*, 2013) and of “engaging head, hands and heart” (Sipos *et al.*, 2008). However, even though the sustainability literature in HE emphasizes transformation and change (see e.g. the recent publication by Fadeeva *et al.* (2014b) and Barth (2015)), ecocentric approaches are less frequently advocated, and the meaning of ‘transformative’ maintains vague. The embedment of different forms of knowing, including the emotional and aesthetical dimensions, is rarely explicitly mentioned when calling for critical reflection, and constitutes a particular challenge within assessment procedures.

IV.2.4 Framing the assessment process

Framing the assessment process presented a challenging task, as the scientific literature is vast, with unclear boundaries, and different research areas had to be linked: General sustainability assessment with higher education for sustainable development and campus specific tools, as well as their dots to democracy,

governance and learning theories. Two specific in depth studies about campus sustainability assessment tools (Yarime *et al.*, 2012a, Fischer *et al.*, 2015) report that these tools focus on environmental operations of the universities, in particular on physical resource management, and that aspects of education and research are underrepresented. Fischer et al [Fischer, 2015 #1002] conclude:

“This is striking since education and research are commonly referred to as crucial fields of action and key functions of universities (...). Apparently, we are observing a general gap between postulated areas of highest impact and factual priorities in the evaluation and assessment of the sustainable university.”

Due to this gap and still evolving debate around sustainability assessment in HE, it became necessary to enlarge the theoretical context. The participative and the governance approach in sustainability assessment (Ramos *et al.*, 2013) have gained increasing attention as being more inclusive and more holistic than expert-led approaches (as the latter may run the risk of missing out important information or misinterpret data), but these approaches often work more on the macro-or meso-level and do not address the participatory process itself. A related strand of research constitutes the field of participatory evaluation (Cousins *et al.*, 2012; Cousins *et al.*, 1998; Cullen *et al.*, 2011), with interesting models for collaborative inquiries (Daigneault *et al.*, 2009; Weaver *et al.*, 2007), but the focus often lies on evaluating development aid in rural communities or collaborative research projects. As the term ‘evaluation’¹⁷ suggests, this approach is rather summative, product-oriented and judgmental. The primary goals and interest of participatory evaluation – seeking “instrumental consequences and to increase the usefulness of knowledge (...), [promotion] of fairness (...) and production of valid knowledge or representation of underlying social phenomena” (Weaver *et al.*, 2007, p. 20ff.), may partly overlap with goals in sustainability implementation in universities and its assessment, but would not

¹⁷ Evaluation and assessment differ in content, orientation and findings, e.g. whereas an evaluation may seek ‘What has been learned?’ (product-oriented), assessment would aim to answer ‘How has learning been going?’ (process-oriented). (See also Footnote 7, p. 105).

do justice to the understanding of participatory processes contextualized to the university setting as described in section IV.2.1.

Furthermore, research observed disagreement between local stakeholders, government authorities and academics about how using self-assessment in sustainability indicators (Mascarenhas *et al.*, 2014), questioning the strength of indicators' sets and their communicative power. Despite these arguments, indicators can be useful to highlight phenomena, to monitor progress, identify strength and weaknesses and prevent unwanted effects (Singh *et al.*, 2009). Purpose, application and the ends of their utilization are decisive for the overall benefit when choosing an indicator-based assessment. Process-oriented approaches emphasize that the utility of indicators "lies not only in the findings themselves, but also in the process that [can] cause to engage in systematic reflection on (...) projects and sometimes lead to changes in perspectives" (Burford *et al.*, 2012, p. 2).

Often, there is a call for more participation in the indicator's development (Doody *et al.*, 2009; Santana-Medina *et al.*, 2013), but the participation remains unconsidered or is treated in a reduced manner, e.g. by looking only at the number of attendees (ibid.) Dahl regards it as a gap that existing sustainability indicators miss the individual: "(...) each individual human-being is a center of decision-making and an autonomous actor. What happens to the planet is the cumulative result of over 6 billion of independent producing and consuming individuals" (Dahl, 2012, p. 17). In this sense, including transformative aspects into sustainability assessment appears to be critical, even though voices from this spectrum alert that the notion of transformative learning might be antithetical to "the tangible explicit and formal nature of assessment" (McEwen *et al.*, 2010, p. 44). At the same time, as pointed out in the introduction, scholars call for new models and innovative ways to engage in new paths that foster collective visioning for truly sustainable universities. Here, dilemmas and tensions can be regarded as beneficial to explore alternatives to current sustainability assessment practices. Bell *et al.* remind that:

"Sustainability is an organic and evolving construct of our minds and not an inorganic static entity that can be physically probed. Indeed, the very action

of trying to implement what one thinks is sustainability may change one's vision of what it is. The best we can achieve is to acknowledge the centrality of people and to put participation and the narrative or story of sustainability at the very heart of implementation. (...) Indicators can play a very useful role here, but only in terms of empowerment and not as precise measures" (Bell et al., 2008, p. 200).

In the line of all these thoughts, INDICARE addresses the challenges presented above and proposes a new approach to looking at universities' sustainability assessment and the engagement of their communities, by responding to the gaps identified above, namely:

- (i) Lack of assessment procedures that stimulate reflection and second order learning instead of fear of control,
- (ii) Need for more exploration of dimensions of participation in assessment,
- (iii) Strengthen the transformative potentials of participatory processes, including the perception of the assessment itself as a learning and empowerment practice,
- (iv) Addressing worldviews and personal values by problematizing the separation of the self from nature.

IV.3 Methods

The model was developed in an iterative way, consisting of several stages building upon each other:

- Results from previous qualitative research phases (Disterheft *et al.*, 2015a; Disterheft *et al.*, 2015b) and enlargement of the theoretical context on transformative learning theories (Argyris *et al.*, 1978, 1996);
- Continuous literature reviews, analysis of existing assessment tools (in particular STARS (AASHE, 2014b) and AISHE, (Roorda, 2001)), as well as critical reflections about ESD in higher education (Disterheft *et al.*, 2012a, 2013b)

- A search for existing indicators/practices/criteria focusing on participatory processes led to over 300 indicators, namely from ESD and social learning projects (Di Giulio *et al.*, 2012; Dlouhá *et al.*, 2013; ESD inds, 2011; Mulà, 2011), as well as from community development (Morrissey, 2000; Wenger *et al.*, 2011). These indicators were analysed in depth and grouped into themes and relevance for the INDICARE model, having some been fully integrated in the present model. These indicators' sets were chosen because of their focus on participatory processes that are less represented in sustainability assessment tools. The search also revealed that the term 'indicators' is frequently applied with varying rigorousness, especially within ESD contexts (Reid *et al.*, 2006), making comparison more difficult;
- Inspirations during an intensive residential course at the Schumacher College, UK, and repeated application of ecological constellations (an embodiment-method based on systemic constellations (Mueller-Christ *et al.*, 2015a; Mueller-Christ *et al.*, 2015b), deriving from Husserl's and Merleau-Ponty's concept of phenomenology (Orbe, 2009);
- Six feedback loops via workshops, meetings and seminars (see section IV.4.5 and appendix B1-B9) between 0.5h-1h of length and consisting of a presentation and/or group work and/or questionnaire (including an evaluation sheet, see appendix B 4). Feedback was collected during conferences, meetings and university visits, having discussed the model with 98 persons: (i) Sept. 2014, WSSD-U 2014, Manchester, UK, (ii) Oct. 2014, Copernicus Alliance Conference, Prague, CZ, (iii) Oct. 2014 ERSCP 2014, Portorož, SL, (iv) Jan. 2015, Alumni / community of practice-meeting Ecological Leadership, Bath, UK; (v) April 2015, Leuphana University, Lueneburg, DE), (vi) June 2016, Universidade Aberta, PT. In all feedback loops, an introductory presentation of the research and model explanation was conducted.

The analysis of the feedback loops helped to simplify the model, to integrate the participants' observations on understandability, usefulness and applicability of the model and to finalize the indicators or practices

IV.4 INDICARE: Integrating an ecocentric approach to the assessment of participatory processes in sustainability initiatives – proposal of a new model

“Indicators arise from values (we measure what we care about), and they create value (we care about what we measure).” (Meadows, 1998, p. viii)

The previous analyses and reflections were woven into a model that encloses three types of indicators or practices, which are presented in detail in this section.

INDICARE follows the perspective of perceiving the assessment process itself as a learning and empowerment practice, which is in particular advocated by scholars from the transformative participatory evaluation field (Cousins *et al.*, 2012; Cousins *et al.*, 1998) as well as from ESD scholars (Barth, 2015) (section IV.2).

This section closes with a resumed analysis of the feedback loops carried out along the development of the model.

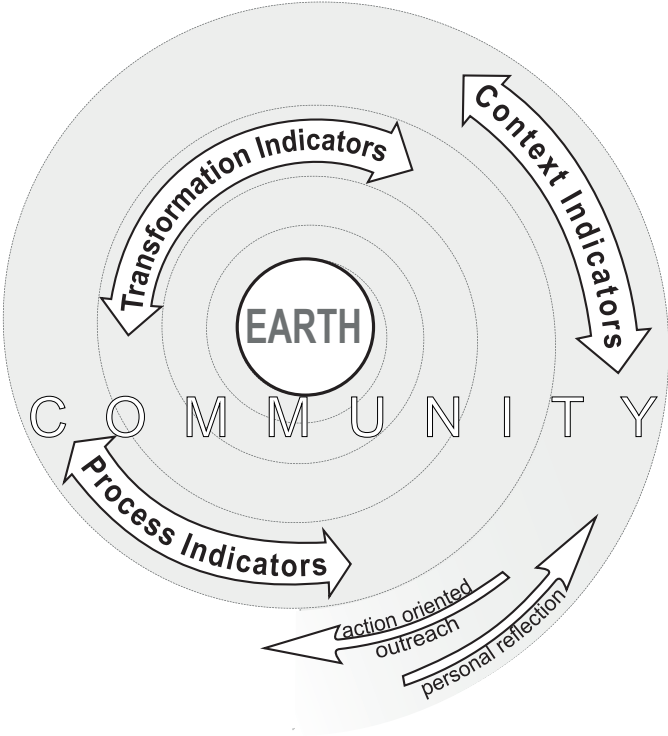
IV.4.1 Introducing purpose, structure and applicability

The INDICARE-model (Figure IV.1) is a model developed from a qualitative framework and has the primary objective to assist in the assessment of participatory processes for sustainability implementation in higher education institutions. It can be applied to institutions that have already a form of participatory processes in place or under development, or to institutions that are planning to start implementing such a process. As explained earlier, the model intends to follow a more holistic perception of assessment and to stimulate critical thinking, personal reflection and inspirations for a transformation towards sustainable universities. The model is therefore overall directed toward the participants themselves and all entities engaged in the process, namely the internal and eventually external interested parties of a HEI. Rather than being a control tool, this model aims to offer participants the possibility to get a clearer picture about the quality of the participatory process and to create meaningful new knowledge. The model may be adapted to the specific context of any sustainability initiative with a participatory character, e.g. sustainability weeks or events, community outreach projects, thematic teaching initiatives, university gardens,

among many others (see examples of initiatives in related literature sources, e.g. the publication series *Environmental Education, Communication and Sustainability* by Peter Lang Publishers, as well as the GUNI series on social commitment of universities 1-5 by Palgrave Macmillan Publishers).

Its structure resembles a spiral, standing for a community with the earth at its center as a way to mirror the ecocentric perspective (section IV.2.2.). This earth-centeredness is meant as an invitation to (i) direct explicitly the attention of the participatory process towards being in service of the earth, encouraging to allow space for reflection and connecting with the natural world, and (ii) to set also the focus of the assessment purpose towards being in service of the community and the earth. The spiral was chosen because it is a fascinating symbol of nature that has inspired over years philosophers, artists, scientists in many different cultural context and is also considered a symbol of change (Beyer, 2013; Lankester, 1903).

Figure IV.1: The INDICARE-spiral



There are two arrows at the entrance of the spiral (Figure IV.1): one pointing toward an inward directed process of *personal reflection* and another one pointing to an outward directed process of *action oriented outreach*. These arrows refer to the interplay of personal reflection and action that needs to occur to make space for personal growth, shift of perceptions and motivation for behavior change: “Expanding our awareness of our inner being and the way our inner world connects to the world around us is an essential requirement to creating an environmental sustainable institution and society” (Sharp, 2002, p. 144).

With regard on participation, these arrows represent the inner and outer dimension of transformative learning:

“Importantly then, transformative learning implies both an inner and outer dimension, a shift in consciousness to embrace an extended sense of relationality. Similarly, Reason suggests that it ‘implies an experience of self much more fully in transaction with others and with the environment, a participatory self or participatory mind’ (...)” (Sterling, 2011, p. 20).

This interplay of inner and outer dimension is incorporated into three types of indicators, namely context-, process- and transformation indicators (sections IV.4.2. to IV.4.4). There are no strict boundaries, as each type of indicators influences and is influenced by the others, and together they stand for non-linear and non-static characteristics of participatory processes. The following criteria were applied for developing the indicators, complemented with a list of practices:

- They express a caring attitude for the well-being of human-nature systems, the earth and the community are at the center of focus (as the wordplay in the model’s name suggests, they *point something out with care*) (Imran *et al.*, 2014);
- They strive for holistic approaches and highlight interrelations (UNESCO, 2014);
- They are adaptable to local context as well as to specific local needs and interests. Before application, it should therefore be assured that they are

meaningful to the participants and eventual necessary adjustments be made (Bell *et al.*, 2008; Dahl, 2012);

- They attempt to address head, hands and heart (Sipos *et al.*, 2008).

These indicators can be described as ‘soft indicators’ (Bormann, 2007) with ‘*loose coupling*’, since they are “process-oriented, located, indicative and resonant” (ibid.) (in contrast to ‘*tight coupling*’, which would focus on accountability and performance), and they were not built for ranking or benchmarking as a main purpose. Even though they respect only partially the criteria for sustainability indicators (Bell *et al.*, 2008; Reed *et al.*, 2006, p. 411) or ESD indicators (Di Giulio *et al.*, 2012; Tilbury, 2007), they fall more into the category of ESD indicators. ESD indicators often display soft instead of absolute indicators, emphasize process and highlight self-assessment, tending “to stimulate learning processes by providing qualitative indicators, which have been actively appropriated and transformed into local knowledge” (Bormann, 2007, p. 7). With these characteristics, ESD indicators correspond more to an ecological paradigm than to a mechanistic paradigm, as the latter rather seeks definitive, detailed, quantitative prescriptive performance indicators (ibid.).

With its focus on assisting participatory processes and stimulating reflection, INDICARE has been developed for application at micro-level (Rode *et al.*, 2008). Options for possibly scaling the model up for use at meso-level can be explored, but are not concretized in the present indicators’ set. The indicators or practices are to be used in a group process, or can be used by core team members of a sustainability initiative. The three types of indicators are divided in different topics (IV.4.2, IV.4.3, IV.4.4): Each topic is expressed in form of indicators or ‘advisable practices’ and measured in quantitative or qualitative ways, namely ratios, percentages, checklists (that can include descriptive examples of application) or questionnaires, based and inspired on several bibliographic sources. Overall, the model can be combined with other existing tools, as it may e.g. help to report on STARS in the categories for engagement (see campus and public engagement in STARS (AASHE, 2014b)).

IV.4.2 Context indicators and practices

As suggested in systemic approaches (Sharp, 2002), the different parts of a system are interdependent and interrelated. The eleven context indicators or practices (Table IV.1) suggested in the INDICARE-model address the overall institutional conditions in which a participatory process takes place, focusing on (exemplary) aspects related to (i) a 'whole-institution approach' (UNESCO, 2014), (ii) governance (Fung, 2006), (iii) education and research (Barth, 2015) and (iv) the aesthetical dimensions (Orr, 2002; Taylor *et al.*, 2009). These dimensions have an impact on the presence or absence of sustainability on campus and influence thereby the ground for participation to happen. Furthermore, they can also point to the importance officially attributed to sustainability and to the existent level of knowledge in this field, e.g. whether inter- and transdisciplinarity (Lang *et al.*, 2012; Parker, 2010) is fostered and regular training in ESD for teaching staff is offered (Barth *et al.*, 2012; Schwarzin *et al.*, 2012). In particular, a whole-institution approach is advocated on highest international level (UNESCO, 2014) for accelerating institutional change and implementing sustainability holistically instead of isolated actions supported only by a few groups. By including also aspects of beauty and aesthetics (Jones, 2013; Krasny *et al.*), it can be reflected on how the physical environment impacts on the perception of human-nature relationships and on the disposition for the academic community to learn and join in for collaborative activities. A pleasant physical environment with well accepted meeting places and where people feel comfortable do not only help developing a sense of place, but are also linked to well-being, constructive learning and community empowerment (Manzo *et al.*, 2006; Taylor *et al.*, 2009).

IV.4.3 Process indicators

Process indicators and practices (Table IV.2) are suggested with a focus on the quality of the process in terms of meaningfulness, depth as well as stimulation for critical reflection and democratic citizenship. They include topics such as (i) *facilitation* (Macy *et al.*, 2014; Virgo *et al.*, 2015), (ii) *communication and democratic principles* (Habermas, 1985), (iii) *the quality of collaboration* (Cooperrider *et al.*, 2008; Dragon Dreaming International, 2014), (iv) *human-nature-relationship and experiencing the*

interconnectedness of systems (Macy et al., 2014; Schultz, 2002). The overall lack of existing process indicators within sustainability and ESD initiatives (Tilbury, 2011) can be understood as a sign that these are more difficult to develop, since each process is unique and shaped by the context where it takes place (see above). These indicators and practices, thirteen in total, combine different strands of theories and practices that touch relevant aspects to determine the quality of a process and that can inspire to take the process to a deeper level. Facilitation has become increasingly recognized as determined for the success of participatory processes (Baan et al., 2011; Disterheft et al., 2015b; Virgo et al., 2015). There is an emerging field of new approaches within the sustainability field, mostly based on systems theory and focusing on transformative learning and *leadership as a form of facilitation*, such as *Theory U* (Scharmer, 2008), *Dragon Dreaming* (Dragon Dreaming International, 2014) and *the Art of Hosting* (Sandfort et al., 2015), with new collaborative methods such as *Open Space*, *World Café*, among many others (Muff, 2014), as well as *systemic constellations* (Mueller-Christ et al., 2015a)¹⁸. These approaches are often applied in community projects or local organisations and institutions, including increasingly universities, which are seen as a laboratory for experimentation (Muff, 2014). They can be bottom-up or top-down initiated, but power struggles associated to one or the other approach should become less significant, as in these processes hierarchies are meant to dissolve¹⁹. Furthermore, these approaches follow democratic principles and aim to foster democratic citizenship. They are by no means exclusive, and can be combined with other methods suitable for the specific context, but should in general be facilitated by a specially trained facilitator.

¹⁸ The research process was accompanied by personal training in some of these methods, in particular systemic constellations, Theory U and Dragon Dreaming. As a result of these trainings, two workshops for Dragon Dreaming were held in Universidade Aberta, Portugal and at the Global Cleaner Production Conference 2015, Sitges, Spain (see appendix B9-B12) in order to gain experience and test these methods in academia.

¹⁹ For further reflection on power and participation, see Gaventa et al. (2006).

To give credit to the quality of communication and the democratic perspective, an *'ideal-discourse indicator'* (Figure IV.2) was developed. This indicator is based on Mezirow's categories for an ideal discourse (Mezirow, 1997), who in turn was influenced by Habermas' ideal dialogue (Habermas, 1985), and can help to indicate the quality of communication by assessing the closeness or distance to the ideal discourse. Furthermore, decision-making should strive whenever possible for consensus building, as consensus avoids hierarchies and represents respect and equality better than decision-making through majority voting. Consensus-based decision-making does not mean that there would not be space for dissensus. Critical voices report that a focus on consensus-building in ESD might narrow down the perspectives and leave out uncomfortable dilemma (Læssøe, 2010). Consensus does not necessarily exclude divergences and pluralism. Actually, the communication directed towards dialogue aims to strengthen diversity and calls for a confrontation with the underlying meaning and values of ideas and interests. This confrontation can lead "to an increased understanding of different views as participants become aware that these views are rooted in different contexts of sense and meaning making" (Wals, 2010a, p. 144). This increased understanding might be a more probable outcome of a consensus-driven approach than a more time-saving approach to decision-making through voting, when appropriate to the circumstances.

Dewey (1916) regards the process of deliberation and communication over collective goals as a democratic public. Interestingly, the audit instrument for sustainability in higher education (AISHE) is uniquely set up on consensus building (Roorda, 2001). Seeley (2010) offers fascinating lessons learnt from his studies about honeybees' decision-making processes, which are also built on consensus, and applies this knowledge in faculty meetings of the Department of Neurobiology and Behaviour at Cornell University. Equally important are considered exercises that help improving effective communication, such as (deep) listening and mindfulness (Rosenberg, 2003; UCLA Mindful Awareness Research Center, 2015; Walters, 2005) which are also encouraged in methods such as Theory U or Dragon Dreaming.

Figure IV.2: The Ideal Discourse Indicator

⇒ *The closer to the ideal discourse, the higher the quality of communication* (based on Mezirow's ideal discourse (Mezirow, 1997))

Possible measurement:

- (i) Individual mapping on prepared sheet, or
- (ii) group mapping (prepared sheet on a wall where participants can use sticky dots).

Note: To reflect on the quality of communication, this indicator can be combined with ESD inds- indicators (ESD inds, 2011):

- People respect, appreciate and find ways to understand the differences in others
- People feel that they have an equal opportunity to express their opinions
- People treat each other with kindness
- People speak courteously to each other
- People treat each other with equity and fairness

Subjectively felt distance/ closeness towards the ideal discourse within the sustainability initiative	Participant are...						
	...allowed full access to information	...free from coercion	...allowed equal opportunity to assume various roles of ...the discourse	encouraged to become critically reflective of assumptions	...empathic and open to other perspectives	...willing to listen and to search for common ground	...willing to make a tentative best judgment to take action
+4 Met the ideal							
+3 Very Close to ideal							
+2 Close to ideal							
+1 In direction towards ideal, but still distant							
-1 Opposite towards ideal, but within reach to change direction							
-2 Far away the ideal							
-3 Very far away the ideal							
-4 Completely non-ideal							

IDEAL

NON-IDEAL



The methods for participatory and collaborative approaches described above share the perception of interconnectedness of human-nature relationships. They are supported by ecopsychological research which showed that experiencing relatedness to nature²⁰ is crucial for well-being, as it can cause happiness and “strongly predicts sustainable attitudes and behaviors” (Zelenski *et al.*, 2014). Returning to the ecocentric approach of INDICARE, it is advocated that participatory processes within sustainability initiatives benefit from allowing space for experiencing connectedness with nature, as it can foster not only the overall individual and collective well-being, but also strengthen intrinsic motivation and values for preserving the ecosystems in balance. In this line of thought, Bonnet suggests to perceive sustainability as a frame of mind, in which “our relationship with nature is a central element of our sense of identity” (Bonnett, 2002).

Based on Schultz’s inclusion with nature-scale (Schultz, 2002), an interconnectedness indicator (Figure IV.3) was developed that can help assessing to what extent participants identify with the perception of interconnectedness of the self and nature. The process of applying this indicator as well as the results obtained at the end offer high potential for discussion and reflection, leading eventually to new perceptions of the human-nature relationships.

²⁰ In ecological psychology, nature relatedness is defined “as individual differences in cognitive, affective, and experiential connections with the natural environment” (Zelenski *et al.*, 2014).

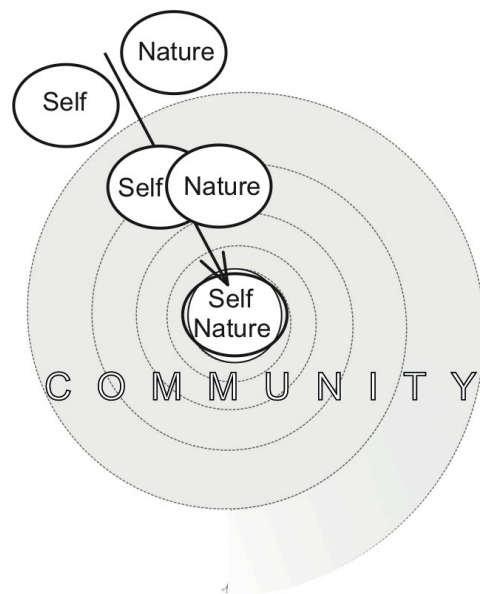
Figure IV.3: The Interconnectedness-indicator for assessing the perception of interconnectedness in human-nature relationship

⇒The closer the participant positions herself/ himself towards or into the center of the spiral, the more she/he identifies with the perception of the interconnectedness of the self and nature (adapted from Schultz, 2002). This identification can be used for further reflection and discussion.

Possible measurement:

- (i) Individual mapping on prepared sheet, or
- (ii) group mapping (prepared sheet on a wall where participants can use sticky dots).

Eventual changes can be tracked over time / along the process



IV.4.4 Transformation indicators

Transformation has become an increasingly used term in sustainability related context, and higher education is no exception, as many recent publication show (e.g. Adomssent *et al.*, 2008; Barth, 2015; Fadeeva *et al.*, 2014b; Hedlund-de Witt, 2013; Mader *et al.*, 2013; O'Brien *et al.*, 2013; Sharp, 2002; Virgo *et al.*, 2015). According to Macmillan dictionary, transformation means “a change into someone or something completely different, or the process by which this happens” (Macmillan Dictionary, 2015). Fadeeva *et al.* (2014a, p. 1) make the interesting proposal to look at ‘quality’ in higher education in terms of “fitness for transformation”. Paradoxically, universities as teaching institutions have shown to be rather lethargic than fit in transforming themselves into sustainable universities (Stephens *et al.*, 2010). One important aspect might be that often the focus is put on performance (as the many existing ranking system for universities show (Lauder *et al.*, 2015)). Transformative learning research made clear that for transformation to happen the focus should fairly be on mastery and competence development instead of predominantly on performance (Pugh *et al.*, 2010). Performance-focused approaches, besides their advantages depending on the context/aims, can sometimes be motivated by ‘avoidance’ – the goal is to avoid the

demonstration of incompetence – whereas mastery, on the contrary, is associated to the increase of interest (*ibid.*). In this sense, the eight transformation indicators and practices of the INDICARE-spiral (Table IV.3) do not attempt to assess the participatory initiative in terms of performance or competitiveness, but on insights about the quality of the changes that have happened along the journey, focusing on topics such as: (i) *shift in perception* (Mezirow, 1997; Mezirow, 1978) , (ii) *new cycles of participation / empowerment* (Disterheft *et al.*, 2015a), (iii) *community cohesion* (Fraser *et al.*, 2006; Wenger, 1998; Wenger *et al.*, 2011) and (iv) *fun and celebration* (Dragon Dreaming International, 2014).

Shifts of perception are at the core of transformative learning (section IV.2.3), however it is difficult to assess these shifts. With the attempt to gain better insights about the transformative potential of a participatory process, a transformation-compass-indicator (Figure IV.4) was developed. This indicator emphasizes the interplay between personal reflection and action-oriented outreach, assuming that the deeper the personal experience is the stronger the commitment to participate in further actions for sustainability. A successful participatory process strives for empowerment and for eventually new cycles of participation (Disterheft *et al.*, 2015a). A transformation might then be expressed in increased self-confidence through new skills, new connections made and feeling valued, with the potential for new leaders and initiatives to emerge from the process. At the same time, the quality of connections determines the community cohesion and the likeliness to collaborate again (Fraser *et al.*, 2006). Finally, it has become increasingly recognized that fun and celebration of achievements along the process, even the most little ones, are an important pillar for transformation in the long-term perspective, because “if it is not playful, it is not sustainable” (Dragon Dreaming International, 2014). Having fun and celebrating are cornerstones of emotional well-being, but often forgotten in sustainability assessment procedures (Bell *et al.*, 2008).

Table IV.1: Context indicators and practices

Main characteristics		
<p>These indicators or practices assess the context, i.e. the presence of the topic of sustainability in the institution. The overall presence of sustainability predetermines the conditions and influences the ground for participation in sustainability initiatives. They can point to the importance attributed to sustainability and to the level of knowledge about sustainability and ESD existent (e.g. whether the topic has become part of the institution or is only shared by a few groups of interest). For each topic several indicators or practices with the respective possible forms of measurement are provided. The main name or focus of each indicator/practice is highlighted in bold, explanations are written in <i>italic</i>.</p>		
Topic	#	Indicator / Practice
<p>Whole-institution approach for sustainability implementation (e.g. addresses the 5 dimensions of a HEI: Education, Research, operations, external community and assessment and reporting)</p>	C1	<p>The university follows a whole-institution approach for sustainability implementation</p>
		<p>Possible measurements</p> <ul style="list-style-type: none"> • Checklist: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) and (ii) are checked examples should be provided <p>Based on UNESCO 37/C resolution 12 (UNESCO, 2014) Choose yes, when: <i>The institution applies fully a sustainability strategy that seeks to align:</i></p> <ul style="list-style-type: none"> - teaching content as well as - campus and facility management as well as - the cooperation with community stakeholders towards the principles of sustainable development. <p>Choose not yet, but in progress when: <i>The institution is in a development process of a sustainability strategy that seeks to follow a whole-institution approach, being in application at least one of the strategic listed above.</i> Choose no, when: <i>The institution endeavours sustainability only in some areas of its institution, with no connection among these efforts.</i></p>
		<p>Sources</p> <p>Adomssent et al., 2008; Cortese, 2003; Koester et al., 2006 Lozano, 2006a</p>

(Table IV.1: Context indicators and practices continued)

Topic	#	Indicator / Practice	Possible measurements	Sources
Governance	C2.1	There exist policies for sustainability implementation, e.g.: - specific declarations (such as the <i>Earth charter or the Rio+20 Treaty (among many others)</i>) have been signed; - a specific institutional sustainability strategy is in place.	<ul style="list-style-type: none"> • Checklist for each indicator/practice: (i) yes <input type="checkbox"/> (ii) not yet, but in progress <input type="checkbox"/> (iii) no <input type="checkbox"/> <p><i>if (i) or (ii) are checked examples should be provided</i></p>	Earth Charter Initiative, 2010; Copernicus Alliance, 2012; ESD inds, 2011.
	C.2.2	Organisational structure of the institution provides space for sustainability implementation, e.g.:		UNESCO, 2014
	C.2.2.1	- A sustainability office exists (and is preferably supported by the top management of the university)		Brinkhurst <i>et al.</i> , 2011; Disterheft <i>et al.</i> , 2015b
	C2.2.2	- Specifically trained staff in ESD are part of the faculty		Barth <i>et al.</i> , 2012
	C2.2.3	- Participation of the academic community in relevant organs of the institution valued and supported officially through inclusive and open governance structures (e.g. committees / advisory boards / representative organs of the institution, (e.g. following criteria as described in STARS or similar)	<ul style="list-style-type: none"> • Checklist for each indicator/practice: (i) yes <input type="checkbox"/> (ii) not yet, but in progress <input type="checkbox"/> (iii) no <input type="checkbox"/> <p><i>if (i) or (ii) are checked examples should be provided</i></p>	UNESCO, 2014; STARS (AASHE, 2014a) and general literature about governance and sustainability in HEIs
	C2.2.4	Institutional decision-making processes provide for equal and just representation	<ul style="list-style-type: none"> • A summarizing diagram of representative organs and their composition is elaborated by the team leaders in order to review the regular election procedures with respect to transparency, equality, gender • Questionnaire / Focus group <p><i>Participants indicate their level of satisfaction with current structures in place and their understanding of inclusive and transformative governance structures, e.g. on a scale from 1-5 or 1-7</i></p>	Fung, 2006); ESD inds, 2011 (Indicator #16)).

(Table IV.1: Context indicators and practices continued)

Topic	#	Indicator / Practice	Possible measurements	Sources
Education and Research	C 3.1	Sustainability has been integrated into the whole curricula and is part of the institution's research agenda	<ul style="list-style-type: none"> • Checklist: <ul style="list-style-type: none"> <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) or (ii) are checked examples should be provided 	Barth <i>et al.</i> , 2012; Lidgren <i>et al.</i> , 2006; Schwarzin <i>et al.</i> , 2012.
	C 3.2.	ESD training for staff (educators) from all disciplines and faculties is offered (e.g. UE4SD project)	<ul style="list-style-type: none"> • Checklist: Training is open to all staff members and takes place regularly, e.g. <ul style="list-style-type: none"> <input type="checkbox"/> (i) yes, 1 to 2 times per year; <input type="checkbox"/> (ii) not yet, but one training already took place in the past and another is planned in the current academic year; <input type="checkbox"/> (iii) no training exists yet • Ratio or percentage of participants in trainings against total number of staff 	UE4SD, 2014; Sterling, 2012.
Beauty and aesthetical dimensions	C4.1	The spaces available to meet (can/should refer to indoor and outdoor) are pleasant and promote interaction rather than passivity:	<ul style="list-style-type: none"> • Questionnaire / focus group <ul style="list-style-type: none"> - Participants indicate to what extent they feel comfortable in the places to meet (e.g. on a scale from 1-5 or 1-7) - Participants indicate how well these places stimulate interaction according to their individual perception (e.g. on a scale from 1-5 or 1-7) 	Orr, 2002; Taylor <i>et al.</i> , 2009 .
	C4.2	The spaces available to meet (e.g. auditory, theatre, university garden, park / loan) are well accepted and are used frequently in daily academic life by a mixture of different groups (faculty, students, non-teaching staff)	<ul style="list-style-type: none"> • Questionnaire: Participants indicate their individual level of acceptance (e.g. on a scale from 1-5 or 1-7) • Observation: Team leaders observe how meeting places are used in daily academic life 	

Table IV.2: Process indicators and practices

Main characteristics	
<i>These indicators and practices assess the quality of the process in terms of meaningfulness, depth as well as stimulation for critical reflection and democratic citizenship. For each topic several indicators or practices with the respective possible forms of measurement are provided. The main name or focus of each indicator/practice is highlighted in bold, explanations are written in italic.</i>	
Topic	Indicator / Practice
Facilitation	Possible measurements
Sources	
P1.1	Before starting the process, it was reflected how the facilitation will be carried out (e.g. with specifically trained facilitator, or university team member or external contributor or a mix)
P1.2	Appropriate participatory methods were carefully chosen
P1.3	Level of satisfaction of participants with the facilitation along the process
P2.1.	Ideal Discourse-indicator (Figure IV.2), <i>Participants assess the closeness / distance towards the ideal discourse</i>
P2.2.	Deep listening and mindfulness exercises: <ul style="list-style-type: none"> The participatory process allows space and moments of collective silence Specific exercises are applied to become aware and reflect on voices of judgment, cynicism and fear There is time to deeply listen to the natural environment
Communication & democratic principles	
	<p>• Checklist: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) and (ii) are checked, team leaders provide a short descriptive justification for the choices made: <i>On the facilitator</i> <i>On the participatory methods</i> <i>A short profile of the facilitator should be added.</i></p> <p>• Questionnaire / Focus group during and/or at the end of the initiative (participants indicate their level of satisfaction, e.g. on a scale from 1-5 or 1-7)</p>
	<p>• Checklist: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) or (ii) are checked, examples should be provided, such as specific techniques or procedures for deep listening that were agreed upon (e.g. a specific item / procedure (e.g. ring a bell) is chosen by the group; see ‘pinakarri’ in Dragon Dreaming)</p>
	<p>Literature on facilitation, e.g.: Virgo et al., 2015; Macy et al., 2014 (good support for checking facilitator’s capacities for SD in Baan et al., 2011, p. 52).</p> <p>Mezirow, 1997; ESD inds, 2011.</p> <p>Dragon Dreaming International, 2014; Theory U (Scharmer, 2008).</p>

(Table IV.2 Process indicators and practices continued)

Topic	#	Indicator / Practice	Possible measurements	Sources
Communication & democratic principles	P2.3.	The process is inclusive and open to all interested parties. (E.g. the process allows for representing absent voices through democratic trusteeships, (Thompson, 2010) or systemic constellations (Mueller-Christ et al., 2015)) - The Earth is represented - Future students are represented - Future collaborators are represented	<ul style="list-style-type: none"> • Team leaders elaborate a diagram of all relevant groups and cross-check the possibilities for each group to access information and to join in • Checklist: Possibilities to include absent voices have been tested: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) or (ii) are checked, examples should be provided 	Jongbloed et al., 2008; Reed et al., 2009; Shiva, 2005.
	P2.4	Decision-making processes thrive for consensus building	<ul style="list-style-type: none"> • Checklist: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) or (ii) are checked, examples should be provided; if (iii) is checked, a short explanation should be given why consensus building was not possible. 	Roorda, 2001; Seeley, 2010; Seeds for Change, 2013
Quality of collaboration	P3.1	Specific participatory methods are applied to offer time for collective dreaming and creating in which outcomes remain undefined	<ul style="list-style-type: none"> • Checklist: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no if (i) or (ii) are checked, examples should be provided 	Appreciative Inquiry Cooperrider et al., 2008 Dragon Dreaming International, 2014; Theory U (Scharmer, 2008); Work by Joanna Macy (Macy et al., 2014).
	P3.2	Participants feel and perceive themselves as being part of something what they co-initiated and co-created	<ul style="list-style-type: none"> • The group elaborates a storyboard of the process (see also P4.3) • Questionnaire (Participants indicate their level of agreement, e.g. scale from 1-5 or 1-7) 	Mochizuki et al., 2010; Rieckmann, 2012
	P.3.3	Development of practical skills and ESD competences is strengthened in the process	<ul style="list-style-type: none"> • Questionnaire / Focus group during and/or at the end of the initiative (participants indicate their level of agreement, e.g. on a scale from 1-5 or 1-7 and provide examples of skills and competences that they could develop) 	

(Table IV.2 Process indicators and practices continued)

Topic	#	Indicator / Practice	Possible measurements	Sources
Human-nature relationship and experiencing interconnectedness of systems	P4.1	Part of the process takes people outdoor	<ul style="list-style-type: none"> • Checklist: <input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no <i>If (i) or (ii) are checked, examples should be provided</i> 	Schultz, 2002; Dragon Dreaming International, 2014; Work by Joanna Macy (Macy et al., 2014); Presencing Institute, 2015.
	P4.2	Interconnectedness-Indicator (see Figure IV.3; people have been invited to reflect where they position themselves in relation to the natural world)	<ul style="list-style-type: none"> • Using Figure IV.3 or (i) Individual mapping (on prepared sheet), or (ii) Group mapping (enlarged prepared sheet on a wall where participants can stick gluing points) <i>Evtl. changes can be tracked over time.</i>	

Table IV.3: Transformation indicators and practices

Main characteristics		These indicators and practices indicate changes that have been taken place on individual, group and institutional level	
Topic	#	Indicator / Practices	Possible measurement
Shift in perceptions	T1	Transformation compass-indicator (see Figure IV.4)	<p>Using Figure IV.4 for</p> <ul style="list-style-type: none"> Individual mapping on prepared sheet, or Group mapping (prepared sheet on a wall where participants can use sticky dots). <p>The indicator should be measured at the end of the process of participation + some time afterwards (e.g. after 6 months).</p>
	T2.1	Increased self-confidence through new skills, experiences, networks	<p>• Questionnaire or focus group at the end of the project + 6 month afterwards. <i>Participants indicate, e.g.</i></p> <ul style="list-style-type: none"> - the increase of self-confidence (e.g. on a scale from 1-5 or 1-7) and responsible factors; - the extent of feeling valued (e.g. on a scale from 1-5 or 1-7 from not feeling valued to feeling highly valued).
	T2.2	People feel more valued	
New cycles of participation / empowerment	T2.3	The process has impact on governance structures	<p>• Checklist:</p> <p><input type="checkbox"/> (i) yes; <input type="checkbox"/> (ii) not yet, but in progress; <input type="checkbox"/> (iii) no</p> <p>if (i) or (ii) are checked, descriptive examples should be provided where applicable. Possible cases could be</p> <ul style="list-style-type: none"> - new institutional policies, or - better integration of stakeholder groups in decision-making (e.g. students being included in decisive organs)

(Table IV.3 Transformation indicators and practices continued)

Topic	#	Indicator / Practices	Possible measurement	Sources
New cycles of participation empowerment Community cohesion	T2.3	Emergence of new leaders / initiatives	<ul style="list-style-type: none"> Team leaders provide a description of examples of new born initiatives that resulted from the process 	Wenger <i>et al.</i> , 2011; Hart <i>et al.</i> , 2006.
	T3	<p>People confirm that they got to know each other better, e.g. they refer to:</p> <ul style="list-style-type: none"> (i) the quality of new connections made, and / or (ii) engagement in meaningful conversations, and / or (iii) likelihood to collaborate again / to do something together (within the community) 	<ul style="list-style-type: none"> Specific Group exercises are facilitated that are directed towards capturing the quality of connections, e.g. <i>making together a picture of knots / a web representing the (new types of) links in the community</i> Can be combined with T1 <i>Transformation compass</i> Questionnaire / Focus group: Participants indicate in which ways they got to know each other better 	
Fun & celebration	T4.1	Fun & celebrations activities are organized regularly along the initiative, celebrating achievements along the process (not only at the end)	<ul style="list-style-type: none"> A photo-collage is elaborated and participants indicate their level of fun on a scale from 1-5 or 1-7 Interactive group exercises are facilitated to check for happiness and well-being 	Sources about group processes (e.g. Virgo <i>et al.</i> , 2015).
	T4.2	People like to join in for celebration of the collective achievement	<ul style="list-style-type: none"> Ratio of number of participants along the initiative against participants in celebration / festivities Questionnaire: Participants indicate if and why they like to join in for celebration 	

Figure IV.4: The Transformation-compass indicator for assessing personal and collective transformations

This indicator gives insights about the changes that took place along the process and about the strength of interplay between personal reflection and action-oriented outreach. It is assumed that the deeper the personal experience is the stronger the commitment to participate in further actions for sustainability.

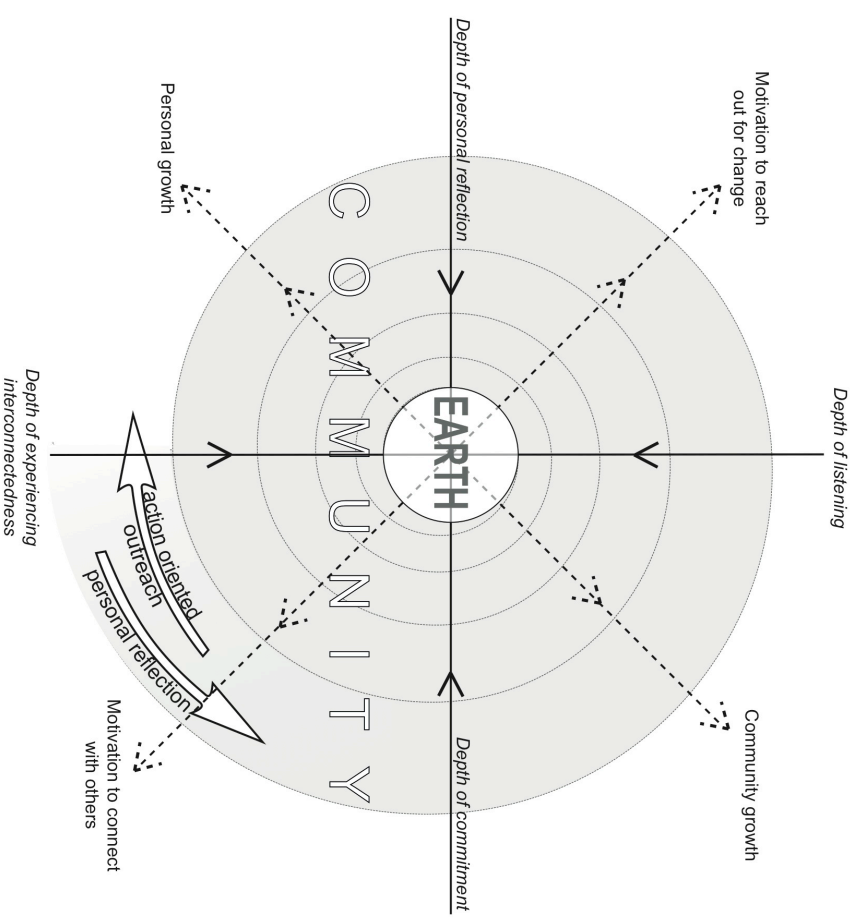
Guiding questions:

Inward pointing arrows: Consider the process you have been part of. To what level of depth has the process taken you with regard on a) deep listening, b) personal reflection, c) experiencing interconnectedness, d) commitment?
 ⇒ The closer the participant positions her/himself on each one of the four arrows towards the center, the deeper she/he has experienced the space provided in the process for reflection, listening, interconnection and commitment.

Outward pointing arrows: Consider the process you have been part of. To what extent has the process taken you with regard on e) motivation to reach out for change, f) motivation to connect with others, g) personal growth, h) community growth?
 ⇒ The farther out the participant positions her/himself on each one of the four arrows, the larger the extent on personal growth, motivation to reach out for change, motivation to connect with others and on community growth.

Possible measurement:

- (i) Individual mapping on prepared sheet, or
 - (ii) Group mapping (prepared sheet on a wall where participants can use sticky dots).
- Each participant is requested to mark her/his position on each one of the eight arrows. Preferably, a time perspective is included (e.g. indicate the position at the beginning and at the end of the process)

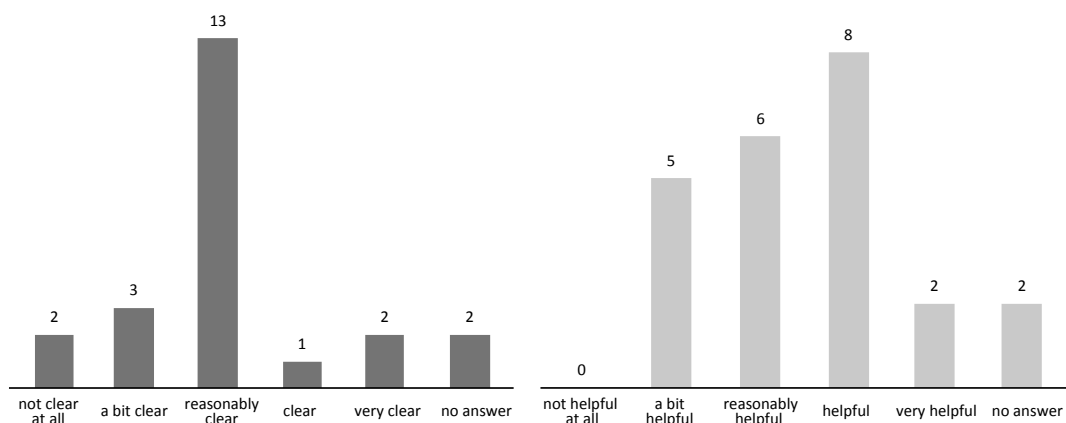


IV.4.5 Feedback loops

The model went through six feedback loops along the different development stages and was presented in total to 98 persons, namely teachers, researchers, community workers and doctoral students, in five different countries (Table IV.4). In all the feedback loops, an introductory presentation of the research and model explanation was conducted. One extended workshop of 1.5h length included also two group works (feedback loop #1). The first workshops helped to understand that the graphical structure of the model needed to be simplified, as to most participants the structure was only a little or reasonably clear (compare the current model with previous versions of figure IV.1 in appendix B2 and B6). At that stage, the model had five types of indicators (context, process, output, outcome and impact indicators), and 11 participation-related themes (see appendix B2-B6).

The individual evaluation sheets (appendix B 4 and B 6) distributed in these three rounds (37% response rate) revealed that the purpose of the model was regarded as being clear, and that such a model could be helpful for assessing participatory processes in sustainability implementation (Figure IV.5).

Figure IV.5: Individual perceptions on the INDICARE-model



Note: Left chart displays answers to “How clear is the purpose of the model to you?”, right chart displays answers to “To what extent could this model be helpful for assessing participatory approaches within sustainability implementation in higher education?”; (n=23, feedback loop #1-3)

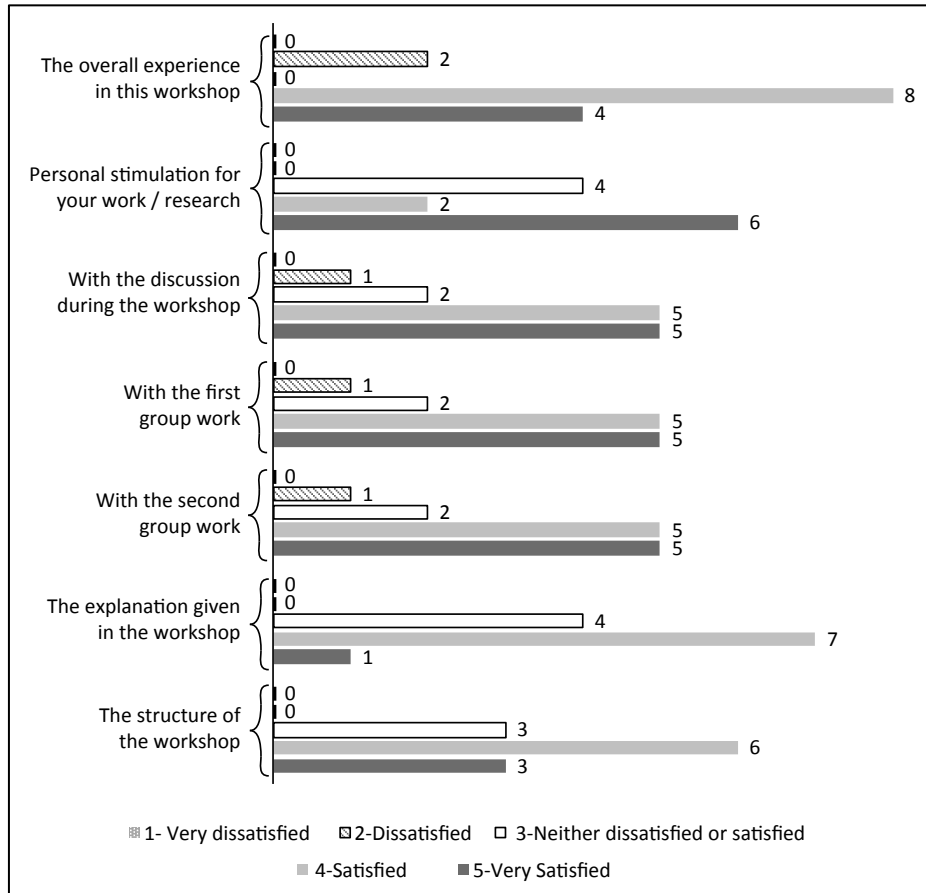
Table IV.4: Feedback loops for model development

#	Event type	Place	(n)	Feedback collection via	Resulting Modifications
1	Workshop during conference	World Symposium Sustainability in Universities 2014 Manchester, United Kingdom	25	Group works (2 rounds of group works in teams of 3-4 persons); discussion round; field notes; evaluation sheet.	Simplification of the graphical structure
2	Workshop presentation	Copernicus Alliance Conference, Prague, Czech Republic	25	Question & discussion round; field notes; evaluation sheet.	Simplification of the graphical structure
3	Presentation in parallel conference session	ERSCP 2014, Portorož, Slovenia	12	Question & discussion round; field notes; evaluation sheet.	Adaption on applicability of the model
4	Presentation during informal meeting	Alumni meeting from the Schumacher's College course on Ecological Leadership, Bath, United Kingdom	11	Question & discussion round; field notes:	Reflections on the concept of transformation , leading to indicators development
5	Presentation during informal meeting	Leuphana University, Lueneburg, Germany	6	Question & discussion round; field notes.	Changes on some indicators and figures
6	Presentation in doctoral seminar	Universidade Aberta, Portugal	19	Question & discussion round; field notes	Present status
<i>Total</i>			98		

Note: (n) = number of participants

Furthermore, most participants felt personally stimulated for their work and research. In particular, the first workshop of 1.5h length (see appendix B 5) and with two group works about the INDICARE model generated deeper discussions and was positively evaluated by the participants (Figure IV.6).

Figure IV.6: Evaluation of participants' satisfaction with the workshop during the WSSD-U 2014, Manchester, UK



Note: Figure refers to feedback loop #1, n=12 of 25 participants (response rate 48%)

The structure of the model was changed along the first three feedback rounds, and became clearer when some of the previous types of indicators merged into the current transformation indicators.

The fourth to sixth feedback round helped adjusting some of the concepts, the indicators' formulation and design, until arriving to the current state.

IV.5 Discussion – broadening the perspectives for participation and sustainability assessment

Assessing participation in sustainability implementation is complex, multi-faceted and much more than only counting the number of participants in an event or initiative. INDICARE responds to the calls of scholars for innovative ways in universities' sustainability assessment and institutional transformation (Jones, 2013; McEwen *et al.*, 2010), striving for broadening the perspectives in multiple ways:

- Through an ***integrative perspective*** by recognizing the interrelations and links between the *context* in which the process takes place, the *process*' design and its execution as well as the *transformation* that can happen along and after an initiative. The respective indicators and practices can help to get a clearer picture of how e.g. the governance structures or circumstances of meeting places (context) impact the communication (process) and community cohesion (transformation) before, during and after a participatory approach. Identifying and understanding these interrelations make part of systems thinking and have the potential to shake up the current (western) educational system, as they may lead to ask the necessary deeper questions for a paradigm change (Orr, 2004). Phillips (2009, p. 209) makes clear that *“the educational system [...] is at the heart of our current unsustainable society, being both its product and its creator. Embodied in all its aspects, from the buildings to staff selection and from catering to curriculum planning are values and assumptions which are in themselves unsustainable”*. If participation in sustainability implementation shall go beyond campus greening in forms of recycling, better waste separation or electricity switching off-campaigns, participatory approaches should allow space for asking these deeper questions. In this sense, the integrative perspective applied in the INDICARE-model is also expressed through emphasizing the interplay of personal reflection and action-oriented outreach. To the authors' knowledge, this aspect has not been captured so far neither in ESD nor in sustainability assessment, and therefore the suggested indicators - in particular the transformation-compass indicator (Figure IV.4) - can offer a fresh look. The model also answers indirectly

to Dahl's critique that sustainability assessment often misses the individual (Dahl, 2012), as it links personal reflection with depth of commitment and motivation to reach out for change.

- By emphasizing an ***empowerment-perspective***, the purpose of assessment is directed away from control, benchmarking or accountability to the benefit of the individual and the collective, in form of personal and community growth, manifested e.g. in community cohesion, increase of trust, new collaborations, new skills and the emergence of new leaders. This perspective is also closely connected to developing one's citizenship skills and rethinking the practice of democracy (Wals, 2010a).
- The ***ecocentric perspective*** invites to consider more systematically the human-nature relationship and to raise awareness for the interconnectedness of societal systems and ecosystems (Imran et al., 2014). This perspective is incorporated in the graphical structure of the model and along the three indicators' types in different ways, mirroring the working definition for participatory processes (section IV.2.1). The INDICARE-model can be seen as a response to Orr's suggestion of adopting another direction in sustainability assessment than many assessment practices currently do, in particular rankings. He proposes that the leading question for sustainability assessment in higher education should be: "Does four years at a particular institution install knowledge, love and competence toward the natural world or indifference and ignorance? Are the graduates of this or that college suited for a responsible life on planet with a biosphere?" (Orr, 2004, p. 90). The suggested indicators and practices in this model can be helpful to track opportunities for reconnecting with the natural world, e.g. the interconnectedness-indicator (Figure IV.3) and the transformation-compass indicator (Figure IV.4), but as well the indicators for beauty and aesthetical dimensions. The ecocentric perspective challenges also to ask whether the community and the earth are at the center of the sustainability implementation and its assessment, or whether there are other purposes, such as marketing and greening the institutional image, distorting this goal. This

perspective does not only help to see the larger picture of sustainability, often associated also to 'strong' or 'deep' sustainability (Beringer *et al.*, 2008; Imran *et al.*, 2014), but strengthens likewise the capability of asking questions like 'Who am I?' and 'How do I want to relate to the world?' (Roszak, 2001). Seeking those kind of answers may take one on an ecological approach to being in the world (Naess, 2008) and to perceive participation as an ecological imperative (Reason, 1998). Such a perception could lead to seeing the world as a whole and ourselves as part of it (Capra, 1997) and include the natural world in the process as it was the main stakeholder (Shiva, 2005). Such a holistic conception would also strive for stimulating all forms of knowing (cognitive, emotional, aesthetic), like a biophilic university would foster (Jones, 2013).

- The ***transformative perspective*** is characterized by using assessment for reflection on values and assumptions, tracking the transformative potentials of a participatory process on individual, collective and institutional level. By adopting a transformative perspective in this model, participatory processes and their assessment can help guiding this transformation through fostering transformative learning, making the necessary space for new values to arise. This perspective is closely linked to the integrative perspective explained above, and by following this perspective, INDICARE responds to the call for putting systemic transformation on the priority level of higher education's research agendas (Stephens *et al.*, 2010; Stephens *et al.*, 2008; Sterling, 2004), as it is also expressed in the Rio+20 treaty for higher education: "#1: To be transformative, higher education needs to transform itself" (Copernicus Alliance, 2012). While acknowledging that important steps were done in redirecting the attention towards transformation, as the Rio+20 treaty or other initiatives (Barth, 2015) show, more energy and effort is needed to continue the path in a new direction. A transformative perspective would e.g. imply changes in the performance-oriented assessment mostly in place. When the focus lies on demonstrating good performance (i.e. being on the top of ranking lists), in order to avoid a lower or even incompetent reputation, or having legal troubles, there is only little space

for transformative experience (Pugh *et al.*, 2010). The energies may then be directed more to 'putting up a good show' than to transformative change, which can be observed in cases of 'greenwashing'. For genuine transformation to happen, the interplay of an inward and outward directed process, as suggested in the INDICARE-spiral, needs to be strengthened and exercised: "The work of institutional transformation is a calling to undertake a parallel journey within ourselves. As we seek to change what is around us we must seek to change what is within us also" (Sharp, 2002, p. 144). Participatory approaches, if appropriately designed, have the potential to foster such kind of a transformative journey towards sustainability and make the links between individual and collective growth.

By following these perspectives, the INDICARE-model intends to offer a contribution to Bell *et al.*'s (2008) advice of perceiving sustainability as an evolving construct of our minds. There will be no final answer of how a sustainable university looks like and no final definition to identify such an institution, even though characteristics have been identified (Beringer *et al.*, 2008). Similarly, indicators for assessing participatory approaches within sustainability implementation will continue to evolve and their reference frameworks can be negotiated, verified and changed. By placing the earth and the academic community at the centre of attention, the overall purpose of sustaining life may be an important focus in this continuous search.

As pointed out in IV2.4, the use of indicators entails several concerns. Besides those previously mentioned, one aspect is of particular importance to consider within the INDICARE-model:

"(...) it is just normatively assumed that indicators facilitate positive distant transfer of knowledge (use in order to stimulate second attendant learning and further development of the knowledge and competencies. (...) If we do not want to just pre-assume normatively that we do right when proposing indicators, formative research is needed" (Bormann, 2007).

Therefore, the authors of this research agree that using INDICARE should be accompanied by empirical research in order to understand better the effects of application and to verify to what extent knowledge transfer is taking place. Ideally, transformative processes should be followed-up on a long-term perspective, beyond the suggested six months in this model, in order to gain better insights about the effectiveness and long-lastingness of undergoing changes. In this regard, HEIs are faced with a particular challenge, as at least one of the main interest groups – the students - usually only stay for a relatively short period of time in their institution.

Similarly to other models, INDICARE has its limitations. For instance with regard on the complex dimensions of participation, this model cannot be considered complete, as other focal points for assessment are imaginable, and an integration in other existing sustainability assessment tools can be desirable. Interrelations between the context and the quality of a participatory process require also further research, as there can be tensions or contradictions regarding the influence of the context on the process itself, as e.g. not necessarily modern optimal facilities may include space for participation.

The presented indicators and practices are not bias-free, as subjectivity is fostered in some cases in order to enhance the reflective process. Representativeness constitutes another challenge, as this model hardly could credibly assist in an assessment with over thousands of students, staff and faculty. Working with larger groups, e.g. over 100 persons to name a number, is possible, but requires even more attention from the facilitators' side. Since facilitation can be regarded as a key element for success (Disterheft *et al.*, 2015b), the suggested indicators #P1.1-1.3 may be used as well in preparing and executing the assessment practice. Concrete experiences on applicability are still needed, and the indicators or practices are neither tested nor indexed yet. In the continuation of this research, it is envisioned to apply and test the model in a HE case study, and investigate together with participants how the assessment is viable in practice. The indicators shall be examined on their strengths and weaknesses, in order to verify how well they can achieve the purpose they were

built for. Furthermore, it shall be investigated if the set of indicators and practices can be aggregated and scaled up to meso-level.

IV.6 Conclusions

Higher education's sustainability implementation has been advanced over at least the last two decades and brought sustainability assessment on the research and policy agenda of ESD and sustainability science. This agenda calls for innovative and more transformative approaches than reductionist practices, in order to respond better to the need for an institutional learning culture that envisions dialogue and change. Universities are seen as ideal fields for experimenting with new participatory processes to foster a transition to a more sustainable paradigm, but the complexity of participation has not been captured yet in existing sustainability assessment tools. As an outcome of a mixed-methods research project, the INDICARE-model was developed and shall contribute to fill this gap. Its indicators and practices are intended to invigorate the sustainability debate in higher education, in particular by proposing a more holistic approach to assessment that emphasizes experiencing the interconnectedness of human-nature relationships, combined with reflective exercises that can respond better to the call for transformation on individual and institutional level. Along the research, the authors reflected deeply on the following questions:

- *What is the purpose of current higher education?*
- *How can the paradigm change for sustainability truly be fostered?*

Inspired by Daniella Meadows' observation "We measure what we care about" (Meadows, 1998), a set of thirty-two indicators or practices point out to participation and sustainability implementation with care for the entire academic community, interweaving the context and the process design with the potentials for individual and collective transformation. Making linkages to the ideas about a biophilic university (Jones, 2013), the INDICARE-model broadens the perspectives on participation and invites to explore new paths towards sustainable universities as well as their assessment. This exploration should include asking deeper questions about underlying

values and assumptions rooted in the current education system and allow space for unconventional approaches that may break with traditional rationality. Perceiving the assessment process itself as a thought-provoking opportunity for learning constitutes one of the many opportunities to transform higher education. In following research steps, the proposed model shall be tested in HEIs in order to assess and calibrate the indicators and practices. The current proposals are just a first preliminary set. Other indicators or practices can be added and up-dated, as well as other possible measurements.

As this research focuses on HEIs, the model was developed for application in universities, but can also be adapted to other organization or contexts.

Final Reflections and conclusions

*“If Nature Study is your goal,
Take note: a single part reflects the whole.
Nought is within and nought without,
For what is in is also out.
So grasp without delay this prize:
That here a holy public secret lies.
Rejoice in true illusion’s fame,
Rejoice in Nature’s serious game.
No living thing alone can be -
It only exists in company.”*

Johann Wolfgang von Goethe

ii. Overview

The study was set out to explore how participatory approaches are used for implementing sustainability in higher education and how these approaches can be assessed. The initial research questions were:

- e) How do universities engage their students, teaching and non-teaching staff in initiatives for sustainability implementation?*
- f) How are these initiatives assessed?*
- g) Having noticed a vague consideration of participation in sustainability assessment and reporting, how can the dimensions of participation be addressed more explicitly and integrated in sustainability assessment in higher education?*
- h) How can answers to these questions feed into the transition process towards a more sustainable university?*

First, the general research process and the theories consulted are reflected to demonstrate how the use of the latter evolved along with the study. This meta-reflection is important for this exploratory study in order to discuss how the researcher's lens impacted the overall research development. This reflection can be regarded as a second order learning exercise (Sterling, 2011) and offers a conclusive perspective on the research carried out. Next, the research questions are answered and followed by discussing the limitations of the work. In the final section, future research paths are outlined.

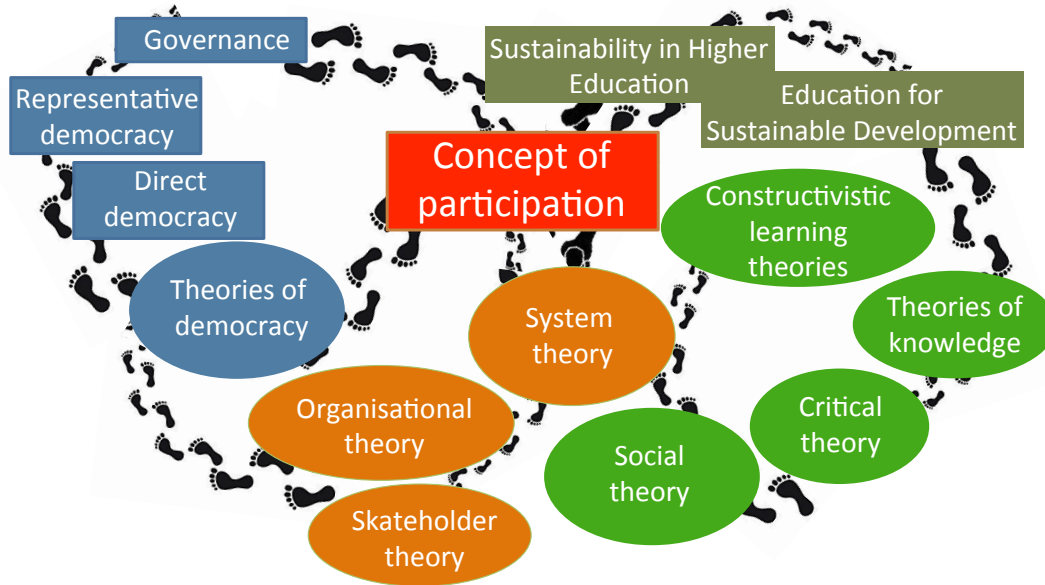
ii.1 Meta-Reflection on the research process

The theoretical reference framework, initially focusing on specific literature about sustainability in higher education and EfS/ESD, kept growing along the research process: Continuously, new questions rose up, challenging the perceptions of sustainability on which the study initially was based. Studying contesting interpretations, as explained in I.2.1, as well as the concept of participation and the related theories of democracy, as referred to in Part III, but also systems theory and stakeholder theory, caused feelings of being overwhelmed by complexity. Carrying out the research felt like 'walking in a labyrinth'²¹ (Figure ii.1).

Engaging profoundly in the research, the process can be compared to a transformative learning process, as it allowed mental shifts to happen and to gain more clarity on personal assumptions and values that have impacted the research direction. Such kind of experience might be typical to exploratory studies, as beautifully expressed by Naipul (1989, in Saunders *et al.*, 2009, p. 140): "If you travel on a theme, the theme has to develop with the travel."

²¹ The metaphor of a labyrinth gained a particular importance at the end of the research, when discovering labyrinths as teaching tools for transformative learning (Rudebeck *et al.*, 2012; University of Kent's Creative Campus Initiative, 2013). Reflecting on the personal learning process, the experience of 'walking in a labyrinth' as a metaphor for experiencing complexity and feeling overwhelmed is to some extent comparable to real labyrinths as teaching tools (*ibid.*), as the process of revisiting concepts and theories allowed a personal better understanding and more clarity for the questions at stake.

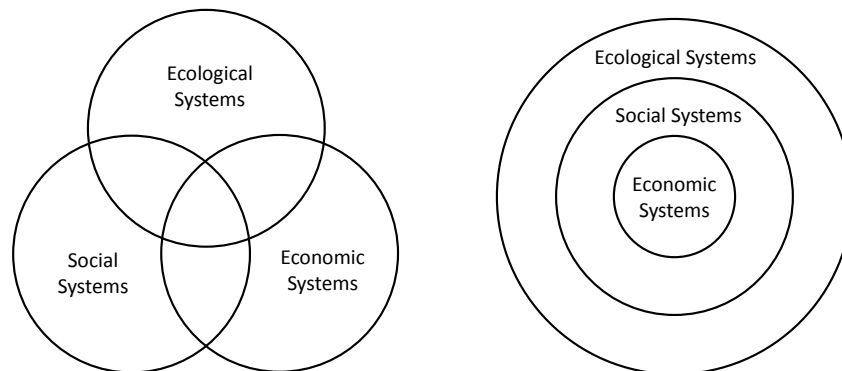
Figure ii.1: Overview of some theories and concepts related to participation consulted during the research



As an outcome of the personal learning process, the view on sustainability changed towards a more systemic perception. Sustainability is now viewed as a nested diagram (Figure ii.2), with the social and economic system being embedded in the ecological system (diagram on the right side), instead of perceiving these systems as only partially overlapping (diagram on the left side). The version of embedded systems has become the fundament for the research undertaken for developing the INDICARE-model, as it represents the interdependence of human-nature relationships and emphasizes socio-ecological values. It can be regarded as aligned to the perception of *'strong sustainability'* (Neumayer, 2010). For this study, these aspects are considered as important to understand the underlying motivation for sustainability implementation (see also II.4.3).

Deepening the studies about transformative learning theories, as of Freire (1972, 1998) and Mezirow (1978, 1997), described in the theoretical sections of III.7.3 and IV.2.3, strengthened the more systemic perspective then included in the research, because this perspective is perceived as more coherent with a holistic approach to learning.

Figure ii.2: Diagrammatic representations of sustainability



Source: (adapted from (Strachan, 2009))

The empirical research phases, as presented in Part III, explored more intensively the ESD debate about competencies and related learning theories. In particular, the loops of learning by Agyris and Schoen (1978) (see III.7.3, and Figure III.4, p. 106), have been useful for making sense of the experienced complexity inherent to sustainability. Associating participatory processes and possible assessment criteria to loops, as the data suggested, constituted an important breakthrough in the research process (see Figure III.6, p. 118). The more intensive engagement with these theories impacted how sustainability assessment and the overall underlying purpose of those practices were understood, questioning critically the underlying motivations for these practices that seemed to be merely economically driven instead of catering socio-ecological needs. Even though specific sustainability oriented ranking tools in higher education, such as STARS (AASHE, 2014b) have definitely brought the sustainability debate in HE further, they lack considering the transformative potentials and higher-order learning opportunities activities targeting a reorientation towards sustainability should actually offer. In the final UN-report about DESD, and with respect on learning and institutionalisation processes in universities, Wals (2014) concludes that some systemic changes towards sustainability have been started, but that these are happening “amidst educational reforms towards efficiency, accountability, privatization, management and control that are not always conducive for such a re-orientation” (Wals, 2014, p. 1). The dissatisfaction with

sustainability assessment tools, expressed by several participants in the sample group of this research, as referred to in the findings in III.4 and III.10, intensified the interpretation that there is a the need for rather new approaches that could integrate better the dimensions of participation into sustainability assessment. In line with the theoretical framework evolving along this study, it appeared to be crucial to consider the empowerment perspective of ESD (Figure I.1, p. 30) and the perception of participation as an ecological imperative (Reason, 1998). These theoretical views included more emphasis on debate and constructive stimulation towards change, but also space for personal reflection and experiencing the interconnectedness of human-nature systems. Integrating these aspects into the model that was developed in this study implied to complement or re-orientate the assessment practice towards quality and transformative potential of a participatory process. The first formulation of the working definition for participatory approaches within sustainability initiatives (p.102) was adjusted in the final research stage (p.134) to reflect the mental shifts and to respond better to the theoretical framework of holistic learning the study was then following.

ii.2 Conclusions

In order to answer the research questions outlined at the beginning of this chapter, this section is divided into four subsections, using one separate section for each question.

ii.2.1 How do universities engage their students, teaching and non-teaching staff in initiatives for sustainability implementation?

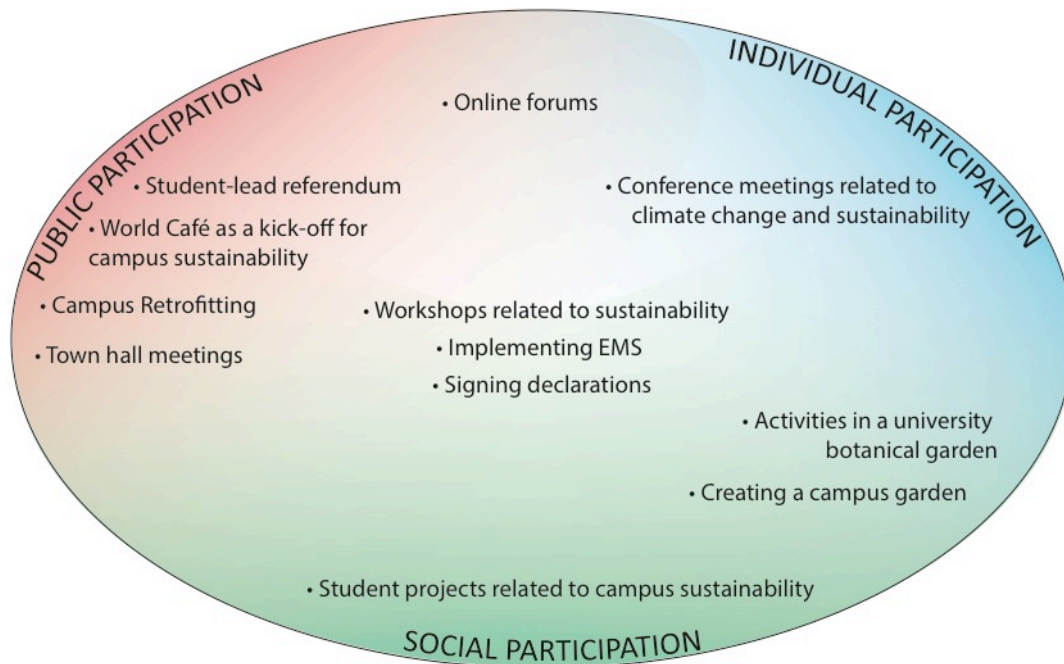
This question can be answered twofold: from a strategic point of view and from a practical point of view. Generally, it could be observed that universities engage their academic communities very differently in both senses: Some follow a more systematic approach, having developed a whole-institution approach for sustainability implementation that includes having developed a vision and a strategy to implement sustainability and ESD institution-wide, not only in campus operations and education, but also in research, community outreach and reporting. Others have

been undertaken more isolated initiatives, not linked to an institutionalised process. Even though the 'whole-institution approach' is increasingly stated in the past decade, only a few universities follow this kind of approach. It is more common that efforts related to sustainability implementation still depend on the dedication of only a few persons, with limited support by the academic community and not integrated into an institutional strategy. Participants in this research described them as often being 'ad-hoc', with the risk to burn out (III.4.2, p.88). Furthermore, there is a tendency to focus on students' engagement, and not to address equally all stakeholder groups, internally and externally (see section II.5 and Table II.5, p.66). Even though staff members are seen as important catalysers for sustainability there is much work to be done in the fields of staff development, applying to both teaching and non-teaching staff.

However, there are a huge variety of activities being carried out, as the uncountable number of case studies, best-practice-examples and sustainability awards show (see e.g. the publication series *Environmental Education, Communication and Sustainability* by Peter Lang Publishers, as well as the GUNI series on social commitment of universities 1-5 by Palgrave Macmillan Publishers). As resumed in IV.1, these activities can be categorized into (i) greening the campus initiatives / campaigns, with a focus on operational improvements (eco-efficiency), (ii) revision of learning outcomes and curriculum reformulation and (iii) institutional research and development projects. The examples below (Figure ii.3) were reported by the participants in this research (III.4.1) and demonstrate just some ways of engagement in sustainability initiatives (II.2.2.2, sorted in the overlapping fields of *individual, social and public participation*).

The findings to this research question also underline that despite a huge body of existing literature, in particular case studies, a reduced understanding of engagement prevails and institutionalized processes that are directed to the whole academic community are still difficult.

Figure ii.3: Ways of engagement reported by research participants (based on III.4.1)



ii.2.2 How are initiatives for sustainability assessed?

Even though there are many specific campus sustainability assessment tools in place, there is a bias observed in the aspects covered: A focus still lies on operations, in particular on physical resource management, and community or educational activities are underrepresented. Part II of this thesis, as well as findings in III.4 and III.10, revealed that the sustainability initiatives are often only assessed in a limited way, e.g. focusing on factual descriptions as number of participants or number and types of activities carried out, leaving aspects like the depth or meaningfulness of participation unaddressed. A more integrative approach is offered by the Graz Model (Mader, 2013), which focuses on assessing the transformative potential of a sustainability process: In this model, different levels of participation (from consultation towards decision-influencing) are distinguished, as well as different levels of learning (from single loop to generative learning), and are part of transformative practices. However, in none of the tools the participatory processes themselves are explicitly assessed, neither the quality of sustainability initiatives and their impacts on future developments. Tilbury noticed a lack of process indicators for

ESD projects (Tilbury, 2011), which seem more difficult to be developed. These observations enforced the need for developing an assessment tool that could help to close this gap and strengthened the importance of the present study.

ii.2.3 *Having noticed a vague consideration of participation in sustainability assessment and reporting, how can the dimensions of participation be addressed more explicitly and integrated in sustainability assessment in higher education?*

Dealing with buzzwords like participation is not easy, and more awareness and a critical attitude when using the term is in general beneficial to approach the term from different angles and avoid using it with empty meaning (see IV.2.1). Part II of the thesis suggests that it is useful to distinguish between different forms of participation, such as *individual, social or public participation* (Brodie *et al.*, 2009), and *nominal, instrumental, representative and transformative participation* (White, 1996), as these reflect the underlying intentions and the objectives of choosing participation: Does participation serve *to inform, or to consult, or to involve, or to collaborate or to empower?* (Figure II.2, p.57). Furthermore, it is helpful to be clear about the societal levels (such as macro-, meso- or micro level) where participation is to take place.

The findings of Part III, namely the *critical success factors* and possible *assessment criteria* for participatory approaches within sustainability initiatives, demonstrate the complexity of such endeavours and the need for non-linear approaches. Perceiving participation as circular processes can help to address and assess the transformative potentials happening along the course and to give more substance to the participants in such a process.

The INDICARE-model itself can be regarded as an answer to the research question above. The proposed set of indicators and practices aim to assist in the assessment of participatory approaches in higher education's sustainability initiatives, considering in particular aspects related to the quality of such processes. Biophilic ideas, transformative learning and participatory evaluation have inspired the development of the model and are reflected in the shape of a spiral. These ideas and theories are regarded as useful for taking a more holistic lens in sustainability

implementation and were translated into indicators and practices. In this model, in order to address the dimensions of participation more explicitly in sustainability assessment, it is suggested to consider:

- The **context** in which a participatory process, directed towards sustainability, takes place, as this is the ground where participation is to happen. The presence or absence of the topic of sustainability in the HEI predetermines the conditions for a participatory process and is influenced by (i) *the institutional approach to sustainability (e.g. whole-institution approach)*, (ii) *the governance model*, (iii) *how sustainability is integrated in education and research*, (iv) *the physical aesthetical dimensions (e.g. pleasant indoor and outdoor meeting places)*.
- The design of the **process**, including (i) the facilitation mode, (ii) the quality of communication and respect of democratic principles (assuring e.g. inclusiveness), (iii) the quality of collaborating with each other beyond hierarchical barriers and (iv) the space given to personal reflections and to connect with the natural world.
- the **transformation** happening along and after the participatory process, e.g. in forms of (i) shifts in perceptions, (ii) new cycles of participation and empowerment (e.g. emerging new leaders); (iii) community cohesion and (iv) fun and celebration.

For each of these aspects several concrete indicators and/or practices are proposed, which can be measured mainly in qualitative ways (e.g. narrative assessment, focus groups) but including as well some quantitative measurement options (e.g. ratios or percentages). The indicators and practices are to be used in a group process, or can be used by core team members of a sustainability initiative. The model can be combined with other existing tools, as it may e.g. help to report on STARS in the categories for engagement (see campus and public engagement in STARS (AASHE, 2014b)). Overall, it can be applied to institutions that have already a form of participatory processes in place or under development, or to institutions that are planning to start implementing such a process. In contrast to performance

oriented sustainability assessment approaches, dimensions of participation can be better addressed from an empowerment perspective that would shift the purpose of assessment to the benefit of the individual and the collective by increasing trust, developing new skills and making space for new (forms of) collaborations. With such a perspective, the practice of democracy can also be better strengthened and contribute more effectively to develop a joined vision of how a sustainable university could look like.

ii.2.4 How can answers to the research questions feed into the transition process towards a more sustainable university?

This study underlined the complexity of the research topic and the vast spectrum of perspectives on how to tackle sustainability implementation in universities. By highlighting the societal mission of universities to serve society and to promote sustainability literacy, this study feeds into the transition process towards a more sustainable university by proposing the following:

- Universities are required to reflect deeper what it can mean to adopt a systemic perspective on sustainability implementation and to strive for socio-ecological justice. Making space for more transformative practices are essential to address the complexity of sustainability. Too often, still, reductionist perceptions are in place, expressed in fragmented organisational structures, making inter- and transdisciplinarity more difficult. The terminology around 'whole-institution approaches' asks for new forms of collaboration contrary to present hierarchical structures and managerial orientations in place. Perceiving universities as living laboratories, these institutions can provide excellent opportunities for engaging the whole community (internal and external) meaningfully in a sustainability discourse. For participatory process to become transformative, this study provides a model that can assist in designing and assessing these processes, shifting from performance-oriented assessment to empowerment-oriented assessment that would link the individual and collective growth.

- By placing the Earth and the community at the center of the proposed model, this study invites universities to engage in a broader discourse about the human-nature relationships and the interconnectedness of societal- and ecosystems, exploring ecocentric and biophilic ideas (Jones, 2013; Orr, 2004). Making space for emotional engagement with nature and for experiencing the interconnectedness of systems may not only increase emotional and physical well-being (Zelenski *et al.*, 2014), but offer in particular the ground for shifts in perceptions to happen that are often sought after in the paradigm shift towards sustainability. Nature connectedness and feeling part of a larger whole can open up to ecological wisdom and to stir the intrinsic motivation to 'perform a beautiful act' (Naess, 2008), deriving from values of care rather than from fear (of punishment, loss of reputation, etc.), stretching out from human- over to ecosystems.

These perspectives are to be understood with a simultaneous defense of 'pluralism of thought' (Wals, 2010a), in which different values, perspectives and ideas are encouraged and treated respectfully, allowing thereby space for deep conversation, creativity and innovation. Wals *et al.* (2002, p. 223) alert not to adopt a narrow look on sustainability issues and not to use a prescriptive attitude, but to address ethical questions related to "development, justice, peace and conflict, human rights and dignity, and intrinsic value of other species, and indeed whole ecosystems". Participatory approaches in sustainability implementation can offer platforms to debate controversial positions in these complex issues, and ideally engage participants holistically, i.e. to include body and senses - 'head-hands-heart-' in order to enlarge the ways of knowing and to take the debate to a deeper, transformative level. Addressing all internal and external stakeholder groups of HEIs as well as strengthening the interplay of personal reflection and action-oriented outreach, can be seen as a strategy for both personal and institutional transformation.

ii.3 Limitations of the study

This mixed-methods study is largely based on qualitative research strategies, adopting an interpretivist-oriented epistemology and a constructionist-oriented ontology. It constitutes therefore a value-laden research, influenced by subjective assumptions and which were balanced with reflexivity in any stage of the work. The research questions, objectives and selected methods constitute choices that are influenced by personal interpretations of the literature and personal interests. Other entry points for how to investigate participatory approaches in higher education sustainability implementation do exist.

The common critique on qualitative research methods - e.g. on being too subjective, difficult to replicate and to generalize, and lacking transparency (Bryman, 2012) – has been acknowledged in the empirical part of this study. As explained in IV.6 and IV.11, the sample of 51 participants in semi-structured interviews and focus groups, is relatively small, limiting thereby the findings' validity and reliability, and cannot be generalized. Additionally, focus groups may deal with group dynamics and specific cultural expectations (Morgan, 2002) that may lead to data tampering (e.g. shy participants do not speak up; cultural factors shape the opinion of the group and form barriers to present individual disagreements). All focus groups in this study were conducted in academic environments that have specific cultural characteristics such as strong hierarchical tradition, respected academic etiquette and increasing competitive orientation. This environment may have diminished to some extent the openness and availability to share diverging opinions. This limiting factor may however be confined by a shared interest in sustainability implementation in higher education among the participants. Furthermore, the data can be considered culturally rich and diverse, as they include references from 22 different countries. The sample, however, is too small to analyse personal and institutional cultural factors. Future research could take these limitations into account and investigate cultural aspects in participatory processes with explicit foci on the personal cultural background as well as on the organisational culture.

The INDICARE-model contains various limitations, regarding the methodic approach and its content. The developed set of indicators and practices lack a

deeper action research approach, as the set ideally would have been developed together with participants, as it is good practice in this field (Bell *et al.*, 2008; Dahl, 2012). Even though the model was discussed with 98 persons, not all ideas and aspects could be discussed in every detail, as the topics presented were very complex and time consuming to discuss. The feedback loops presented in IV.4.5 could not be extended at the current stage of research due to the time constraints of the participants, but also due the high organisational efforts implied in conducting the discussion rounds. The presented set of indicators and practices cannot be regarded neither as complete nor as representative. Different indicators can be proposed and should be in accordance to participants' urgencies or perception of relevance. As referred in IV.5, p.172, the model is limited in its applicability for larger groups. Furthermore, the current set of indicators and practices were not applied in practice yet, and more information on applicability and viability is still needed.

ii.4 Future research

In order to address some of the limitations described above, the INDICARE-model is being prepared, at the moment of writing, for a phase of simulation and/or testing, in form of a case study at one or two universities. Concrete contacts were already made with two universities for this purpose, and a simulation and/or testing phase of the INDICARE-model is planned within the near future. This phase will follow an action research approach (Reason *et al.*, 2008) and shall include several stages. In a first stage, sustainability practitioners working in sustainability coordination units in the respective universities are to be invited into a focus group discussion with 4 to 10 participants. In this discussion, the INDICARE-model shall be used for a simulated assessment process based on the experience of a past sustainability initiative in which the participants were involved in. Using a semi-structured interview guide, each indicator or practice shall be discussed on its applicability, relevance and possible integration into existing assessment practices, leaving also space for other topics to emerge that might be important for the participants. Space shall also be given to discuss current trends in the higher education sector and how these impact assessment practices, exploring for example

questions on how to foster transformation, potentials or pitfalls of an ecocentric approach in sustainability implementation, or other themes brought up by the participants. In a second stage, the model shall be tested in a concrete sustainability initiative that would allow carrying out a full assessment, using the indicators and practices wherever possible with the people engaged in the respective initiative. The second stage is dependent on the interest, availability and willingness of a higher education institution to take part in this type of research.

In general terms, further studies are needed on transformative learning processes and holistic approaches, in order to understand better their impact on personal growth and institutional sustainability implementation. Future research should also address the effectiveness of sustainability-oriented interventions at universities and investigate underlying motivations for such endeavours, in order to be able to respond better to the quest for institutional transformation and serving the public good. More inter- and transdisciplinary research is necessary in which new collaborative methods, such as Theory U and Dragon Dreaming, among others, can be experimented with and tested in order to explore further the dimensions of participation and systems thinking, as well as the applicability of such methods in the university context. Such research could focus on science-society interfaces and on the potential for change towards a more sustainable paradigm, embedding the research in the service of socio-ecological systems.

Postface

This doctoral thesis challenged me on a personal level by asking how do I want to approach sustainability in this research. There were phases of frustration, as the deeper I engaged with the topic, the more I felt a gap between what I was reading in the literature and what I could observe in academia. Why are universities as learning institutions still on a rather unsustainable path and what do transformative learning theories mean in practice to implement education for sustainability in higher education? With regard on participatory processes, what do these processes truly serve for?

It was first difficult to organise the many different ideas and inspirations, coming both from theories and concepts as well as from the participants in my research, into a plausible assessment model. Reflecting on my personal learning journey, I completely identified with the following statement:

“...each learner goes through a period of chaos, confusion and being overwhelmed by complexity before new conceptual information brings about a spontaneous restructuring of mental models at a higher level of complexity thereby allowing a learner to understand concepts that were formally opaque”(Blackmore et al., 2015, p. 613).

This identification is expressed in personal journaling notes from Feb 18, 2015:

“The past months have been a period of chaos and confusion to me. On my journey to develop the INDICARE-model, I had wonderful inspirational moments followed by waves of feeling overwhelmed by the complexity of the topic. In particular, the attempt of developing indicators were not successful yet, since developing indicators around participation by myself seems rather paradoxical. However, I am on my journey, having read many thought-provoking texts, re-structured and consolidated some of my mental models.”

(personal journaling notes, 18.02.2015)

I wondered how the Earth would look at the sustainability assessment endeavours in place and whether these assessment practices do primarily intend serving the Earth and its communities or whether these serve as green marketing opportunities for profit maximisation. With this question in mind, and as an invitation to debate

ecocentric approaches, I put the Earth and the community in the centre of the assessment model I was developing. The INDICARE-model, as presented in Part IV, is therefore not only the final outcome of this mixed-methods study, but also an outcome of a personal transformative learning process. This learning process allowed reflecting on different epistemological views and gave space to new personal values arising along the research. Values such as those underlying the Earth Charter (Earth Charter Initiative, 2010), as well as the principles expressed in Vandana Shiva's Earth Democracy (Shiva, 2005), highlighting the intrinsic values of human-nature systems, turned to become personal values I hold highly. They can be associated to the spiritual-cultural dimension of sustainability (Burford *et al.*, 2013). This spiritual-cultural dimension is integrated in EfS/ESD discourses (Sterling, 2004), but it has been lost in some of the official SD policy documents: "In the final outcome document from Rio+20, *The Future We Want*, the concept of values [...] disappears altogether" (Burford *et al.*, 2013, p. 3039). This loss is of great concern, as values inform our ethical decisions and influence the further direction of our development path. Continuously debating values should be closely intertwined with any sustainability discourse, since "achieving sustainability is fundamentally an ethical challenge" (Dahl, 2012, p. 14).

To meet this challenge, it has become important for me to take down the artificial barriers science and current academic practices aim to create between the personal self and the research or other tasks at stake. I agree with Sharp when she says:

"Expanding our awareness of our inner being and the way our inner world connects to the world around us is an essential requirement to creating an environmental sustainable institution and society" (Sharp, 2002, p. 144).

Awareness of our inner being allows us to engage meaningfully in profound questions that sustainability related topics inevitably ask. Only by asking these deeper questions we can get at the 'depth of things', to use Schumacher's words cited in the preface, and challenge our mental models. Feeling connected to the world around us can lead to answers why we want to engage in the sustainability discourse and inform our actions fed by a personal intrinsic motivation.

Bell *et al.* (2008) reminds me beautifully that there is no definite answer to the ultimate state of sustainability implementation, but that the people and participation are indispensable and need to be in the center of attention in order that ideas about sustainability can continue to evolve:

“Sustainability is an organic and evolving construct of our minds and not an inorganic static entity that can be physically probed. Indeed, the very action of trying to implement what one thinks is sustainability may change one’s vision of what it is. The best we can achieve is to acknowledge the centrality of people and to put participation and the narrative or story of sustainability at the very heart of implementation. (...) Indicators can play a very useful role here, but only in terms of empowerment and not as precise measures” (Bell et al., 2008, p. 200).

Finalizing the thesis in the midst of a global refugees crisis, shortly after the publication of the post-2015 Sustainable Development Goals and shortly before the 21st UN Conference on Climate Change in Paris, I wish that this research may inspire for profound, innovative and unconventional forms of engagement of HEIs in sustainability, asking deeper questions and helping to find ways how to respond to these global challenges.

Having departed with some questions and rather unspecific ideas in mind, this research introduced me to a new world of theories, concepts and ideas, opening new doors at each research stage. This research gave me the wonderful opportunity to immerse myself into a topic that allowed me to grow not only as a so-called early-career researcher, but to grow as a human being.

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Appendix A
for Part III – Empirical Studies

A 1: First Invitation letter to interviewees (WSSDU-2012, Rio de Janeiro, Brazil)



Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences



PhD Research project from Antje Disterheft

"Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal |

HAW – University of Applied Sciences Hamburg, Germany | CENSE, Lisbon, Portugal

Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011

Dear WSSD-U-2012 participant,

My name is Antje Disterheft and I have started this year my PhD project about participatory processes within sustainability initiatives at universities.

Prof. Walter Leal Filho, who is one of my supervisors, has suggested contacting you due to your expertise in sustainability implementation processes in higher education institutions. I hereby would like to kindly ask you to participate in a short interview (not longer than 30 minutes) during the World Symposium Sustainability at Universities 2012. You can find the interview questions below.

My research objectives of this initial stage are to identify characteristics and success criteria for participatory processes when carrying out sustainability initiatives or fostering sustainability strategies in universities, and to find out how participatory processes can be effectively assessed.

I would be very grateful, if you would agree to participate in this interview and indicate a convenient time during the WSSD-U-2012 event.

Looking forward to meeting you in Rio de Janeiro!

Kind regards,

Antje Disterheft

General information

The participation in this interview is voluntary and the information provided will be dealt confidentially. The participant remains anonymous and personal data, like nationality, profession, age etc. are only used for contextualizing the data. Results and findings of this research will be available to the participants, after data treatment.

Short biographical note

Antje Disterheft is currently doing her PhD in *Social Sustainability and Development* at Universidade Aberta, Lisbon, Portugal. She is a member of the *Centre for Functional Ecology, group Ecology and Society*, at Universidade de Coimbra, Portugal. She holds a degree in *Social Work* from University of Applied Sciences Hannover, Germany (staatl. anerkannte Diplom-Sozialarbeiterin/Sozialpädagogin) and a master degree in *Environmental Citizenship and Participation* from Universidade Aberta. Since her first studies, she is very much interested in the social questions related to Environment, having participated in several campus projects. She has also worked for five years as an academic coordinator for international programmes at one of Lisbon's state universities.

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May 2012

Page 1 of 2

A 2: Summary of interview question (attached to invitation letter A1)



PhD Research project from Antje Disterheft

"Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany | CENSE, Lisbon, Portugal
Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011

INTERVIEW QUESTIONS

1. *How can participatory processes in sustainability initiatives or sustainability strategies of your university look like?*
 - 1.1. *Which groups of people are involved?*
 - 1.2. *How are the different groups involved?*
2. *Are these participatory processes assessed / evaluated, and if yes, how/in which form? (E.g. is there a specific tool used for this purpose?)*
3. *Does your university use any form of sustainability reporting, and if yes, in which way? (e.g. like Global Reporting Initiative (GRI)-Guidelines, STARS, Sustainability Report Card, EMAS, ISO 14001 etc.)*
 - 3.1. *According to your opinion, is this tool helpful/useful for the assessment of participatory dimensions, and if yes, why or how does it help in this context?*
 - 3.2. *Are there aspects that could be improved?*
4. *Which criteria would you find important to be considered in order to give credit to the assessment of participatory processes?*
5. *Please think back to one or several previous sustainability initiatives at your university where people were involved in the implementation process. How would you rate in average this (these) participatory process(es) on a scale from 0-5, where 0 means failure/not successful at all and 5 means great success? (Likert scale 0= failure/not successful at all; 3 = all right; 5 great success)*
 - 5.1. *Can you please state which the objectives of this process were?*
 - 5.2. *According to your opinion, would you say that these objectives were achieved, and if yes, what were the most successful aspects?*
 - 5.3. *In case you think the objectives have not been achieved, which were the factors that impeded a successful participatory process?*
6. *Do you have any further suggestions for my research?*

A 3: Interview guide (for personal use)

Interview Guide

DATE:

TIME:

Interviewee name:

1. Introduction

- My name
- Research institutions (HAW, CFE, UAb, funded by FCT)
- Research topic and objective
- Why the interviewee was selected
- How the interview will be conducted (recorded) and how long it will take (not longer than 30 min).
- Information about confidentiality of data (participants remain anonymous)

My name is **Antje Disterheft**, and I am a PhD student at **Universidade Aberta**, and at the same time a member in the research units **Centre for Functional Ecology, Coimbra**, and **Research and Transfer Centre Applications of Life Sciences in Hamburg**. The objective of my investigation in this initial stage are to **identify characteristics and success criteria for participatory processes when carrying out sustainability initiatives or fostering sustainability strategies in universities**, and to find out **how participatory processes can be effectively assessed**. You have been chosen due to your expertise in sustainability implementation in universities and I would like to thank you for your agreement and availability for this interview.

This interview will **take approx. 30 min.** and is recorded, but all **information will be treated confidentially and you remain anonymous**.

Are you ready to start the interview?

2. Participatory processes – description

- a) *How can participatory processes in sustainability initiatives or sustainability strategies of your university look like?*

Note: If necessary, further explanation: e.g.

How would you characterize these processes and which are significant aspects typical to these participatory processes?

Possible clarifying questions:

- *Can you expand a little on this?*
- *Can you tell me anything else?*
- *Can you give me some examples?*

- b) *Which groups of people are involved?*

Note: If not mentioned by the interviewee, ask explicitly for subgroups

- (i) *Are students involved?*
- (ii) *Is administrative / support staff involved?*
- (iii) *Is teaching staff involved?*
- (iv) *Are external community members involved?*

- c) *How are the different groups involved?*

- d) **FQ:** *Are these participatory processes assessed / evaluated?*

(A 3 continued)

Interview Guide

If yes:

2d1) How are they assessed?(e.g.is there a specific tool used for this purpose?)

Note: Skip 3.1. and go to question 3.2

If no: Proceed with 3.1. and skip 3.2.

3. Participation in Assessment tools

3.1. In case participatory processes have not been assessed yet

a) **FQ: Does your university use any form of sustainability reporting?**

If yes:

3.1.a1) Which form or assessment tool?

(Show card with different tools, like GRI, STARS, Sustainability Report Card, EMAS, ISO 14001 etc.)

3.1.a2) According to your opinion, is this tool helpful/useful for the assessment of participatory dimensions?

If yes:

3.1.a2.1) Why?/ How does it help?

3.1.a2.2.) Are there aspects that could be improved?

If no, proceed to b)

b) Which criteria would you find important to be considered in order to give credit to the assessment of participatory processes?

3.2. In case participatory processes have been assessed already

a) You said that your university applies the assessment tool xy. May you please have a look at this line in this table. According to your knowledge, would you please fill in the table and mark the respective columns with an x?

b) According to your opinion, is the tool xy helpful/useful for the assessment of participatory dimensions?

If yes:

3.2.b1) Why?/ How does it help?

3.2.b2) Are there aspects that could be improved?

If no, proceed to c):

c) Which criteria would you add in order to improve the assessment of participatory processes?

Note: Show again dimensions of participation in the table

Interview Guide

4. Failure and Success criteria

- a) *Please think back to one or several previous sustainability initiatives at your university where people were involved in the implementation process.
How would you rate in average this (or these) participatory process(es) on a scale from 0-5, where 0 means failure/not successful at all and 5 means great success?*

Note: Show card with Likert scale 0= failure/not successful at all – 3 = all right – 5 great success

- b) *Can you please state which the objectives of this process were?*
c) *According to your opinion, would you say that these objectives were achieved?*

If yes:

- 4c1) *What were the most successful aspects?*

Possible clarifying questions

- *Can you expand a little on this?*
- *Can you tell me anything else?*
- *Can you give me some examples?*

If no:

- 4c2) *According to your opinion, which were the factors that impeded a successful participatory process?*

- d) *Do you have any further suggestions for my research?*

5. Interviewee profile

- a) *Can you please shortly inform about nationality, your country of residence, your academic background?*

Note: show card with age groups (e.g. 20-29, 30-39, 40-49, 50-59, 60-69, over 70) for the interviewee to point at)

- b) *Can you please shortly inform about your functions at University xy?*
c) *How does your work relate to sustainability implementation processes and which are your responsibilities in these processes?*
d) *How long are you working in this field?*

Thank you sequence – END of interview

A 4: Support material for question 3.2 in interview guide

Assessment tool	Dimensions of participation					assessment of participatory processes				
	participation assessed (x=yes; - =no)	includes students	includes faculty members	includes staff	Includes external community		quantitative oriented	process-oriented	Differentiation between forms of participation	how?
AISHE	x	x	x	x	x	-	x	x	Interactive learning methods for the academic community (not students-focused)	x
CSAF	x	x	x	n.d.	x	x	-	x	Volunteering, voter turnout, community engagement within policy-making	-
GASU®	x	x	x.	x.	x	x	-	x	Report about capacity building, course "Educate the educators in SD", research related to SD, partnerships on local level	-
STARS	x	x	x	n.d.	x	x	-	x	Co-curricular education, volunteering and community service, partnerships on local level	-
STAUNCH®	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sustainability Report Card	x	x	x	x	n.d.	x	-	x.	Employee outreach opportunities, different forms of students involvement	-
Ecological Footprint	-	n/a	n/a	n/a	n/a	x	-	n/a	n/a	n/a
EMAS	x	n/a	n/a	n/a	n.d.	x	x	x	Differentiation between top-down and bottom-up governance, stakeholders engagement in diverse forms	-
ISO 14001	-	n/a	n/a	n/a	-	x	x	n/a	n/a	n/a
ISO 26000	x.	n/a	n/a	n/a	x	x	x	x.	Stakeholders' engagement	n/a
GRI	x	n/a	n/a	n/a	x	x	x	x	Differentiation between top-down and bottom-up governance, stakeholders engagement in diverse forms	n.d.

n/a= not applicable; n.d.= not defined

A 5: Visual support material for questions 3.1a

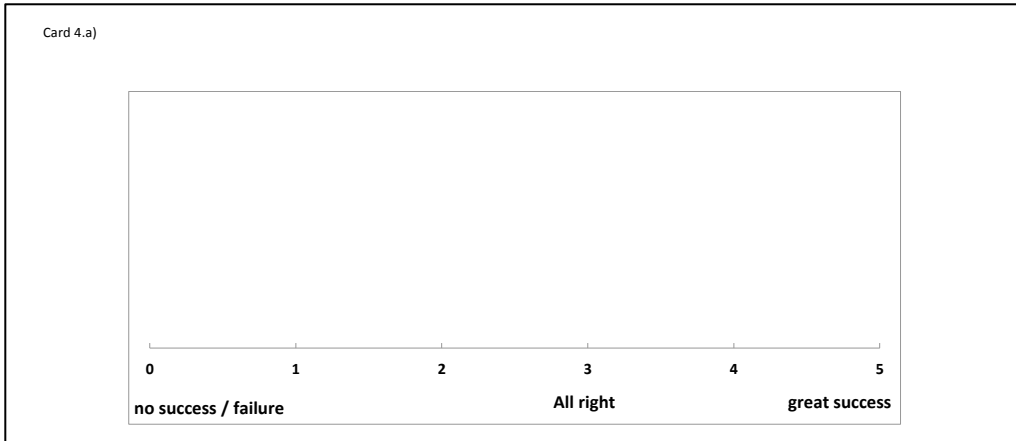
Card question 3.1.a1)

Sustainability assessment tools applied in universities

- **AISHE – Auditing Instrument for Sustainability in Higher Education**
- **CSAF – Campus Sustainability Assessment Framework**
- **Ecological Footprint**
- **EMAS – Eco-Management and Audit Scheme**
- **GASU® – Graphical Assessment of Sustainability in Universities tool**
- **Global Reporting Initiatives (GRI)-Guidelines**
- **ISO 14001**
- **ISO 26000**
- **STARS – Sustainability Tracking, Assessment & Rating System**
- **STAUNCH® – Sustainability tool for Auditing Universities Curricula in Higher Education**
- **Sustainability Report Card**

Other

A 6: Visual support material for question 4a – showing the Lickert scale



A 7: Visual support for question – list of age groups

- Card question 5a
- Age groups**
- **20-29 years**
 - **30-39 years**
 - **40-49 years**
 - **50-59 years**
 - **60-69 years**
 - **Over 70 years**

A 8: Invitation letter to selected interviewees

(data collection during research phase at HAW Hamburg, Germany, March-May 2013)



PhD Research project from Antje Disterheft

“Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students’ engagement in European Universities”

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany |

Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011

Dear <name>,

My name is Antje Disterheft and I have started this year my PhD project about participatory processes within sustainability initiatives at universities.

Prof. Walter Leal Filho, who is one of my supervisors, has suggested contacting you due to your expertise in sustainability implementation processes in higher education institutions. I hereby would like to kindly ask you to participate in a short interview (not longer than 30 minutes). You can find the interview questions below.

My research objectives of this initial stage are to identify characteristics and success criteria for participatory processes when carrying out sustainability initiatives or fostering sustainability strategies in universities, and to explore how participatory processes can be effectively assessed.

Thank you very much for your collaboration and your time

Looking forward to meeting you!

Kind regards,

Antje Disterheft

General information

The participation in this interview is voluntary and the information provided will be dealt confidentially. The participant remains anonymous and personal data, like nationality, profession, age etc. are only used for contextualizing the data. Results and findings of this research will be available to the participants, after data treatment.

Short biographical note

Antje Disterheft is currently doing her PhD in *Social Sustainability and Development* at Universidade Aberta, Lisbon, Portugal. She is a member of the *Centre for Functional Ecology, group Ecology and Society*, at Universidade de Coimbra, Portugal. She holds a degree in *Social Work* from University of Applied Sciences Hannover, Germany (staatl. anerkannte Diplom-Sozialarbeiterin/Sozialpaedagogin) and a master degree in *Environmental Citizenship and Participation* from Universidade Aberta. Since her first studies, she is very much interested in the social questions related to Environment, having participated in several campus projects. She has also worked for five years as an academic coordinator for international programmes at one of Lisbon’s state universities.

Contact: antje.disterheft@haw-hamburg.de | +49 160 94 60 52 73
antje.disterheft@uc.pt | +351 922 12 5358 |
Skype user name: antje.disterheft

A 9: Summary of interview questions (Attached to invitation letter A 8)



PhD Research project from Antje Disterheft

"Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany |

Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011

INTERVIEW QUESTIONS

1. *How can participatory processes in sustainability initiatives or sustainability strategies of your university look like?*
 - 1.1. *Which groups of people are involved?*
 - 1.2. *How are the different groups involved?*
2. *Are these participatory processes assessed / evaluated, and if yes, how/in which form? (E.g. is there a specific tool used for this purpose?)*
3. *Does your university use any form of sustainability reporting, and if yes, in which way? (e.g. like Global Reporting Initiative (GRI)-Guidelines, STARS, Sustainability Report Card, EMAS, ISO 14001 etc.)*
 - 3.1. *According to your opinion, is this tool helpful/useful for the assessment of participatory dimensions, and if yes, why or how does it help in this context?*
 - 3.2. *Are there aspects that could be improved?*
4. *Which criteria would you find important to be considered in order to give credit to the assessment of participatory processes?*
5. *Please think back to one or several previous sustainability initiatives at your university where people were involved in the implementation process. How would you rate in average this (these) participatory process(es) on a scale from 0-5, where 0 means failure/not successful at all and 5 means great success? (Likert scale 0= failure/not successful at all; 3 = all right; 5 great success)*
 - 5.1. *Can you please state, which the objectives of this process were?*
 - 5.2. *According to your opinion, would you say that these objectives were achieved, and if yes, what were the most successful aspects?*
 - 5.3. *In case you think the objectives have not been achieved, which were the factors that impeded a successful participatory process?*
6. *Do you have any further suggestions for my research?*

A 10: Focus group guide

Focus group test run

Location: Sinaia

Date: 10th of April 2013

Time: 17:00-19:00 or 20:00 - 22:00h

Participants: Tutors and experts of EVS (professors, teaching staff, PhD students, non-teaching staff with experience in ESD)

Phase	Topic	Research question	planned activity / question for discussion	expected outcome	time
1	Warming up	What do the participants understand by the term participation?	<p>Introduction (slide n° 1-3)</p> <p>"What are the three first terms that come up your mind when you think about participatory processes in the university context?"</p> <p>→ distribute cards and pencils to write down terms; give about 2 min. for reflection</p> <p>→ everybody reads out loud her/his terms</p> <p>→ show definition of participation of World Bank</p> <p>„Participation is a rich concept that means different things to different people in different settings. For some, it is a matter of a principle, for others, a practice, and still for others, an end in itself.“</p> <p>(The World Bank Participation Sourcebook, 1996)</p> <p>→ ask the group to make comments, if wanted, and making connection to Phase 2</p>	<p>different perception of understandings and associations with the term participation</p>	<p>5 min.</p> <p>5 min.</p> <p>2-3 min.</p>
total time Phase 1: ca. 20 min.		Which experience do the participants bring into the group discussion?	<p>"What are your experiences with participatory processes in the university context? "</p> <p>→ moderator asks the group, brief round discussion and eventual further question to expand, if necessary</p>	<p>Different levels of experience</p> <p>CONTINUE WITH SHORT THEORETICAL CONTEXT</p>	<p>5-10 min</p> <p>5 min.</p>

(A 10 continued)

Focus group test run

Location: Sinaia

Date: 10th of April 2013

Time: 17:00-19:00 or 20:00 - 22:00h

Participants: Tutors and experts of EVS (professors, teaching staff, PhD students, non-teaching staff with experience in ESD

Phase	Topic	Research question	planned activity / question for discussion	expected outcome	time
4	Closing remarks / feedback	How did the group experience this test-run? What can be improved?	<p>→ moderator leads to the end of the discussion. Feedback questions: <i>"Now at the end of the group discussion, I would be happy to receive some feedback about the organization, structure and content. As you know, this is a test run and your comments will help me to improve for the next round. So, how did you experience this group discussion? Which aspects did you like and which aspects should be improved?"</i></p> <p>→ And my final question: <i>"Do you have any suggestions for my research?"</i> → moderator comments on the discussion and thanks for the collaboration.</p>	Feedback about the test run and for my research	10-15 min.
1h 45 min (max. 2h)					

A 11: Sample of invitation letter for focus groups



Dear participant of the International "Learning for the Future" Conference,

My name is Antje Disterheft and I am a PhD student (2nd year) at University of Applied Sciences Hamburg (HAW Hamburg) and Universidade Aberta, Lisbon, Portugal, studying in the doctoral programme *Social Sustainability and Development*.

My research is about **participatory processes within sustainability initiatives in the university context** and I am investigating how these processes can be assessed. It is therefore closely linked to the concept of Education for Sustainable Development.

So far, I have conducted and analysed 15 semi-structured interviews with experts involved in sustainability implementation in higher education institutions. Now, I would like to discuss the preliminary findings of my data with further experts, in order to complete the analysis.

Mr. Eussen kindly supports my research project and suggested you as an expert.

I hereby would like to invite you to a focus group discussion during the RCE meeting in Kerkrade about the following topic:

"Critical success factors for participatory processes within sustainability initiatives in the university context"

Since the conference programme is fully packed, **the most convenient time could be**

Wednesday, 15th of May 2013 during lunch (meeting after the closing ceremony), for approx. 1h

The idea is to discuss success criteria for participatory processes when carrying out sustainability initiatives or fostering sustainability strategies in universities, and to explore further the dimensions of participation in our efforts for implementing sustainable development in higher education institutions.

Since you are familiar with sustainable development and have experience with this topic in the university context, I am convinced that we could have a very interesting discussion that hopefully will also be of use for your personal professional situation and for future ESD activities.

I would be very thankful if you would agree to participate in this focus group and to support my data collection.

Thank you very much in advance for your time!

Antje Disterheft

contact: +49 160 94 60 52 73 | +351 922 12 53 58
antje.disterheft@haw-hamburg.de | antje.disterheft@uc.pt
Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology,
University of Coimbra, Portugal
FTZ-ALS, HAW Hamburg, Germany

**International "Learning for the Future Conference", Kerkrade, Netherlands,
May 2013 13th-16**

Page 1 de 2

(A 11 continued)

General information

The participation in this group discussion is voluntary and the information provided will be dealt confidentially. The participants remain anonymous and personal data, like nationality, profession, age etc. are only used for contextualizing the data. Data records will only be used for transcribing purposes and not be shared with anyone than the researcher (Antje Disterheft). Results and findings of this research will be made available to the participants, after data treatment.

PhD Research project from Antje Disterheft

"Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany |

Supervisors:

Dr. Sandra Caeiro, Universidade Aberta / CENSE - Center for Environmental and Sustainability Research, Universidade Nova de Lisboa, Portugal

Dr. Ulisses Azeiteiro, Universidade Aberta, CEF - Centre for Functional Ecology, University of Coimbra, Portugal

Dr. Walter Leal Filho, HAW - Hochschule fuer Angewandte Wissenschaften Hamburg, Forschungs- und Transferzentrum "Applications for Life Sciences" (FTZ-ALS)

Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011

Short biographical note

Antje Disterheft (German, 35 years) is currently doing her PhD in *Social Sustainability and Development* at Universidade Aberta, Lisbon, Portugal. She is a member of the *Centre for Functional Ecology*, group *Ecology and Society*, at Universidade de Coimbra, Portugal. She holds a degree in *Social Work* from University of Applied Sciences Hannover, Germany (staatl. anerkannte Diplom-Sozialarbeiterin/Sozialpaedagogin) and a master degree in *Environmental Citizenship and Participation* from Universidade Aberta. Since her first studies, she is very much interested in the social questions related to Environment, having participated in several campus projects. She has also worked for five years as an academic coordinator for international programmes at one of Lisbon's state universities.

A 12: Sample of powerpoint presentation used in focus groups

AbERTA  Hochschule für Angewandte
Wissenschaften Hamburg
Hamburg University of Applied Sciences  Centro de Ecologia Funcional



ERSCP-EMSU 2013
Istanbul, Turkey
6th of June 2013

AbERTA  Hochschule für Angewandte
Wissenschaften Hamburg
Hamburg University of Applied Sciences Focus group about participatory processes in the university context

 Centro de Ecologia Funcional

Agenda

- 1. Introduction
- 2. Theoretical context
- 3. Preliminary results Part I
- 4. Preliminary results Part II
- 5. Closing remarks



PhD project *"Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"*

2

AbERTA  Hochschule für Angewandte
Wissenschaften Hamburg
Hamburg University of Applied Sciences Focus group about participatory processes in the university context

 Centro de Ecologia Funcional

1. Introduction

The main objectives of my overall PhD project are:

- To analyse how universities involve the academic community in their efforts for campus sustainability and how these efforts are assessed
- To develop a measurement tool for participation and empowerment processes within sustainability initiatives in the university context

What has happened so far:


- Exhaustive literature review and analysis of sustainability assessment tools applied in universities
- First data collection: 15 semi-structured expert interviews




PhD project *"Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"*

3


(A 12 continued)

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Wissenschaften Hamburg
Hamburg University of Applied Sciences

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▪ **Lack of universal definition for the term “participation”:**



„Participation is a rich concept that means different things to different people in different settings. For some, it is a matter or a principle, for others, a practice, and still for others, an end in itself.“
(The World Bank Participation Sourcebook, 1996)

PhD project “Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students’ engagement in European Universities”

4

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Wissenschaften Hamburg
Hamburg University of Applied Sciences

Focus group about participatory processes in the university context


 Centro de Ecologia Funcional

 And what are your experiences with participatory processes within sustainability initiatives in the university context?




PhD project “Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students’ engagement in European Universities”

5

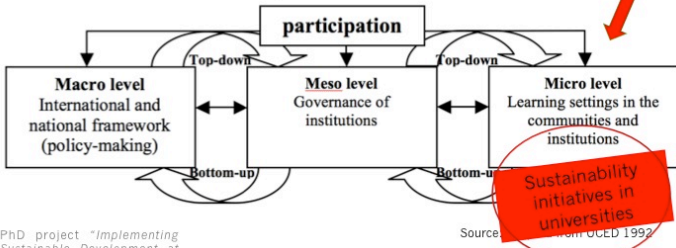
ABERTA  Hochschule für Angewandte
Wissenschaften Hamburg
Hamburg University of Applied Sciences


Focus group about participatory processes in the university context

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3. Theoretical context

▪ Participation on different societal levels



Source:  UNCED 1992

PhD project “Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students’ engagement in European Universities”

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(A 12 continued)

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(continuation warming up)

Scope of participation

High participation
 Low participation
 No participation

Transformative participation
 Function: Empowerment

Representative participation
 Function: Give voice to participants

Instrumental participation
 Function: Efficiency

Nominal participation
 Function: Display

PhD project "Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"

Source: Spectrum of participation (adapted from International Association for Public Participation (2007))

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CSF	Outcomes & benefits
communication	avoiding resentments
enough time	better results
Experience	capacity building
identification with goals	collaboration
making sure that the right persons are at the table and that they are really heard	confidence
Non-judging attitude	Employability of students
personal strengths and persistence	empowerment
➢ Data derived from expert interviews with respondents from Australia, Finland, Germany, Portugal, Russia, Sweden, UK, USA	fun and enjoyment
➢ 10 female respondents, 5 male	increase of acceptance
➢ Diverse academic backgrounds, but with working experience in sustainability implementation in the university context between 3 and 20 years	improved dialogue
➢ 20 years average years of working experience	optimism
Tangible objectives	participants as multipliers for sustainability
to find out what people are caring about	positive image of the university
Other?	raising champions

3. Preliminary findings: Critical success factors for participatory processes in sustainability initiatives at universities

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3. Interview quotes about CSF

Example 1:

"The most significant part is that every participant at every level, the students, the staff, the faculties, the administration, feels like they accomplished something to promote sustainability. And we can see it. I am not most proud of 'oh, ya, I've got a solar panel on the roof'; it's that we all worked on it and look: 'It worked!'"

Example 2:

"I think what impedes a participatory process is an argument for sustainability that comes from any group or stakeholders – could be faculty, could be students – that arrives as a demand, often as a moral demand, 'we demand that we are carbon neutral', or 'we demand no more water bottles, plastic water bottles on campus'; will get in the way of a participatory discussion... We're interested in this, we really try to teach our students and ourselves not to act in that way."

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(A 12 continued)

<p>ABERTA  Hochschule für Angewandte Wissenschaften Hamburg Hamburg University of Applied Sciences</p> <p> Centro de Ecología Funcional</p> <h2>4. Assessment criteria for participatory processes</h2> <table border="1"><thead><tr><th>Quantitative</th><th>qualitative</th></tr></thead><tbody><tr><td>economic savings</td><td>inter - and transdisciplinarity</td></tr><tr><td>how many persons participated?</td><td>striving at innovation</td></tr><tr><td>how many events/ courses / workshops etc. took place?</td><td>striving at knowledge sharing</td></tr><tr><td>inter and transdisciplinarity</td><td>evaluation of what happened as a result of the initiative</td></tr><tr><td>long term perspective</td><td>"the quality of the shift of the way we do things at the college"</td></tr></tbody></table> <p>PhD project "Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"</p> <p>10</p>	Quantitative	qualitative	economic savings	inter - and transdisciplinarity	how many persons participated?	striving at innovation	how many events/ courses / workshops etc. took place?	striving at knowledge sharing	inter and transdisciplinarity	evaluation of what happened as a result of the initiative	long term perspective	"the quality of the shift of the way we do things at the college"	<p>Focus group about participatory processes in the university context</p> 
Quantitative	qualitative												
economic savings	inter - and transdisciplinarity												
how many persons participated?	striving at innovation												
how many events/ courses / workshops etc. took place?	striving at knowledge sharing												
inter and transdisciplinarity	evaluation of what happened as a result of the initiative												
long term perspective	"the quality of the shift of the way we do things at the college"												
<p>ABERTA  Hochschule für Angewandte Wissenschaften Hamburg Hamburg University of Applied Sciences</p> <p> Centro de Ecología Funcional</p> <h2>4. Interview quote about assessment criteria</h2> <p>Example:</p> <p><i>"So, traditionally, the government tends to use criteria like 'how many people attended?' or 'how many workshops were held?'; 'how many locations were they held in?'...very linear, kind of meaningless evaluations... statistics. More meaningful data might be 'what actions resulted from the commitments by the participants during the sessions, 'what connections with other... how many connections with other participants were made?'; the more non-linear, networking kind of evaluation."</i></p> <p>PhD project "Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"</p> <p>11</p>	<p>Focus group about participatory processes in the university context</p>												
<p>ABERTA  Hochschule für Angewandte Wissenschaften Hamburg Hamburg University of Applied Sciences</p> <p> Centro de Ecología Funcional</p> <h2>5. Closing remarks</h2> <p> </p> <ul style="list-style-type: none">Your feedback about this focus group discussion is welcome!Do you have any suggestions for my research? <p>PhD project "Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"</p> <p>12</p>	<p>Focus group about participatory processes in the university context</p>												

(A 12 continued)

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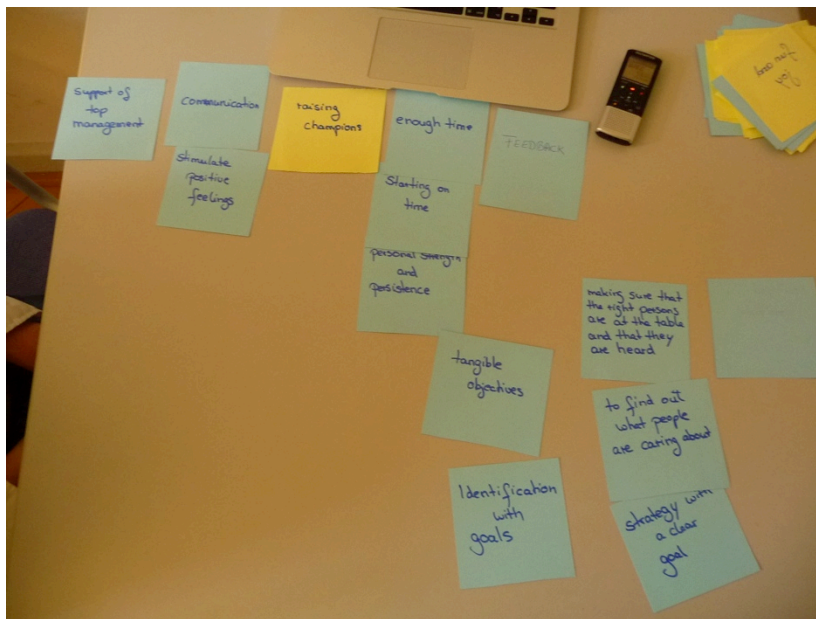


Thank you
very
much!

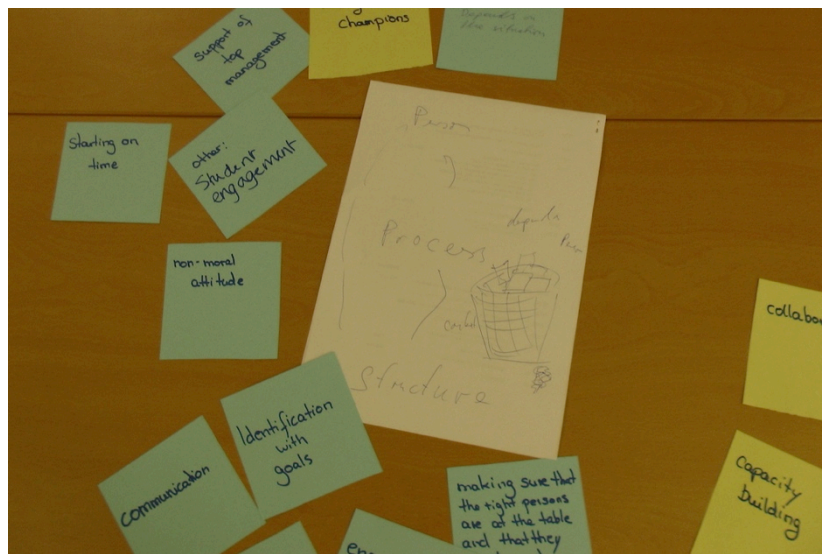
PHD project "Implementing Sustainable Development at university level: An assessment of participatory approaches involving faculty and students' engagement in European Universities"

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A 13: Exemplary photographs of card sorting exercise during focus groups



(A 13 continued)



Appendix B
for Part IV – Designing a new model

B 1: Example of workshop schedule for researching about INDICARE

Focus group for data collection for PhD thesis

Collecting feedback on the Eco-centered participation assessment spiral
 September 3, 2014, 16:00 – 17:30
 Room 3.08, Manchester Metropolitan University

Workshop schedule

16:00	Welcome Introduction to objectives of the workshop and to the research – power point presentation (~15 min) <i>until slide 22</i> (Not to forget to announce: People can interrupt and ask questions) Clarifying questions Instructions for the discussions
16:20	Division into groups of 4-5 people (6 groups), Before going into groups, participants choose object from the natural world (stones, woods, etc.) from the table First discussion: Holistic approaches in assessment, and to what extent does the model appear to you following a holistic approach? ~15 min.
16:40	Plenum – short reporting back to all ~5-10. min.
16:50	Introduction to second group discussion: <i>Slide 24-26</i> Division into groups of 3 people (~7 groups) 2 nd discussion: Themes of the model ... ~20 min.
17:10	Plenum – reporting back and final suggestions 10 min.
17:20	Closing the workshop – slide 28 and 29 distributing thank you-gifts and individual questionnaire
17:30	End of workshop

Not to forget:

- Thank you gift (chocolate / cookies)
- Elements from the natural world (to be placed in the middle of the room, before group work everybody can take an element)
- Cards for individual reflection
- Feedback sheets for the group discussions
- Individual questionnaire

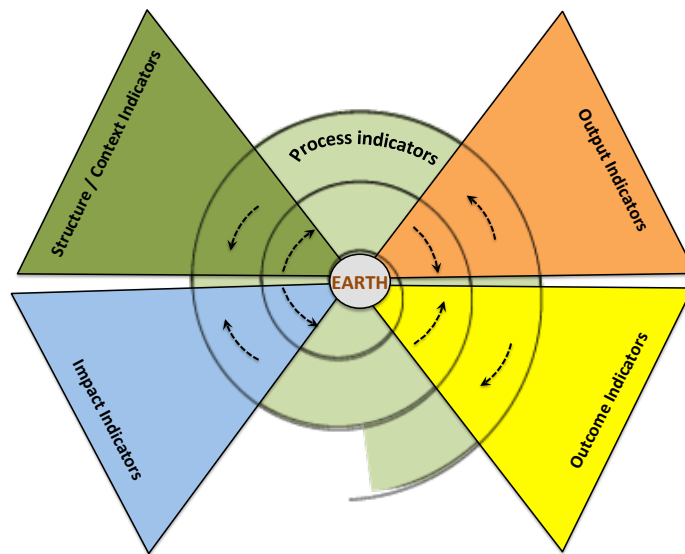
B 2: Worksheet for first group work during workshop



Group Work I

Workshop within INDICARE (indicare)-CARE for planet, people, learning
WSSD-U 2014, Manchester, UK
03rd of September 2014

THE ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)



0. Please select a note taker.
Please aim to complete within 15 min.

1. After having been introduced to the ECPAS-model, which are the first 3 words that come to your mind?

Please write *individually* on the cards provided (very spontaneously, without thinking too much, complete within less than in a minute).

On the reserve of the card, please complete: **“The Earth means to me.....”**

Share in the group your first impressions.
(The cards are to be collected afterwards).

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Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011

B 3: Worksheet for second group work during workshop



Group Work II

Workshop within INDICARE (indicare)-CARE for planet, people, learning
WSSD-U 2014, Manchester, UK
03rd of September 2014

- 0. Please select a note taker.
Please aim to complete within 20 min.**

II Evaluation of themes

Instructions: You have been introduced to the following themes that could be included into an assessment of participatory approaches within sustainability implementation. Please read the questions and discuss in your group how you evaluate the adequateness and relevance of these themes in this context. The questionnaire is to be filled in as a group.

Suggested themes

- i. Quality of collaboration
- ii. Quality of dialogue
- iii. Quality & level of engagement
- iv. Quality of personal development / learning
- v. Level of satisfaction
- vi. Level of empowerment
- vii. Extent of democratic principles
- viii. Institutional governance / provision for space of participation
- ix. Spirituality / Earth-connectedness

- 1. To what extent do you agree that these themes fit in the overall topic
“Assessing participatory approaches within sustainability initiatives in
higher education”?**

1 – do not agree at all; 2 – slightly agree, 3 – neither agree or disagree,
4 – agree; 5- strongly agree

Themes	1	2	3	4	5
Quality of collaboration					
Quality of dialogue					
Quality & level of engagement					
Quality of personal development / learning					
Level of satisfaction					
Level of empowerment					
Extent of democratic principles					
Institutional governance / provision for space of participation					
Spirituality / Earth-connectedness					

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1

(B 3 continued)



Group Work II

Workshop within INDICARE (indikare)-CARE for planet, people, learning
 WSSD-U 2014, Manchester, UK
 03rd of September 2014

2. To what extent do you agree that these themes are relevant for the overall assessment of participatory approaches within sustainability initiatives?

1 – do not agree at all; 2 – slightly agree, 3 – neither agree or disagree, 4 – agree; 5- strongly agree

Themes	1	2	3	4	5
Quality of collaboration					
Quality of dialogue					
Quality & level of engagement					
Quality of personal development / learning					
Level of satisfaction					
Level of empowerment					
Extent of democratic principles					
Institutional governance / provision for space of participation					
Spirituality / Earth-connectedness					

3. Are there themes that, according to your opinion, you would discard from the list, and if yes, which one(s)?

No, I would not discard any
 Yes, I would discard (please specify below)

4. Are there themes that, according to your opinion, are missing, and if yes, please suggest further theme(s):

No themes are missing
 Yes, these themes are missing
 (please specify)

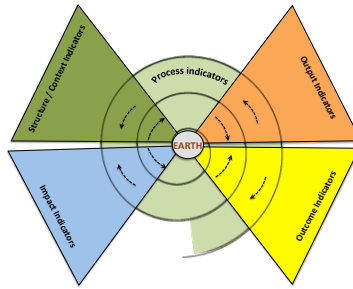
5. Further comments (optional):

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 University of Applied Sciences Hamburg, Germany |
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B 4: Individual questionnaire at the end of the workshop

Individual questionnaire

THE ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)



1. On a scale from 1 to 5, please indicate how clear the purpose of the model is to you

- 1 – Not clear at all
 2 – A bit clear
 3 – Reasonably clear
 4 – Clear
 5 – Very clear

In case you ticked 1-3:

If possible, please indicate below any aspects that are not clear to you in order that we can work on improvements related to the clarity:

2. On a scale from 1 to 5, how clear is the graphical structure of the model to you, with regard to the ideas of integrative assessment?

- 1 – Not clear at all
 2 – A bit clear
 3 – Reasonably clear
 4 – Clear
 5 – Very clear

Feel free to add suggestions for improvement below:

3. To what extent do you think this model could be helpful for assessing participatory approaches within sustainability implementation in higher education?

- 1 – Not helpful at all
 2 – A bit helpful
 3 – reasonably helpful
 4 – Helpful
 5 – Very helpful

(B 4 continued)



Individual questionnaire

4. Higher education institutions are considered to be very complex and different from other public (or private) organisations, in terms of structure, specific hierarchies (based often on a traditional academic culture), fragmentation into disciplines, etc. Promoting inter- and transdisciplinarity are key aspects for sustainability implementation.
Thinking about what makes participatory approaches for sustainability in higher education eventually different from other contexts, like participation in local groups in the municipality or community work, what specific characteristics or needs of higher education institutions should be taken into consideration in this kind of assessment?
-
-
-
-

5. And finally, we would like to ask for your feedback on the workshop itself. Please indicate how satisfied you are regarding the aspects below:

*1 – very dissatisfied; 2 – dissatisfied,
3 – neither dissatisfied or satisfied, 4 – satisfied, 5- very satisfied*

How satisfied are you regarding	1	2	3	4	5
The overall experience in this workshop					
The structure of the workshop					
The explanations given in the workshop					
With the first group work (extent of holistic approach of the model)					
With the second group work (evaluation of themes)					
With the discussions during the workshop					
Personal stimulation for your work / research					

Feel free to add any further comments (optional)

For internal statistic purpose only

Please tick what applies:

- Male Female
- 20-29 years 30-39 years 40-49 years 50-59 years
- 60-69 years older than 70 years

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antje.disterheft@uni-koeln.de

B 5: Summary of data analysis for workshop at WSSD-U 2014 (Sept. 2014)

Summary Workshop at WSSD-U 2014, Manchester, UK 3rd of September 2014

Table of Contents

0.a Workshop overview (objectives and guiding questions).....	1
0.b Workshop schedule	2
1. Overview of workshop sample	3
2. Analysis from Group Work I.....	3
3. Analysis of Group Work II	8

0.a Workshop overview (objectives and guiding questions)

I. Objectives of the workshop:

- To present a model for assessing participatory approaches in higher education's sustainability initiatives and the current stage of indicators' development
- To ask for the participants' feedback
- To stimulate dialogue about holistic approaches and qualitative aspects in sustainability assessment, with a focus on participation

II. Guiding questions:

1. How do workshop participants (=sustainability practitioners in HEI) react on the preliminary proposal of the ECPAS model?
2. Is the graphical presentation of the model perceived to represent a holistic approach, and if yes, in which form / to what extent?

With regard to the structure of the model

3. How is the division/organisation of the model into different areas of indicators, such as structure/ context, process etc. be perceived?

The analysis of existing indicators' sets led to the development of **themes**, like *quality of collaboration, quality of dialogue, level of satisfaction, level of democratic principles*, etc. Examples are given by a list of selected indicators:

4. Which themes are considered of most importance / highest relevance with regard on the effectiveness of a participatory approach?
5. Are there themes that are perceived not to belong to this topic, and if yes, which?
6. Are there themes that are missing in this topic, and if yes, which?
7. What further comments and suggestions do the workshop participants have?
8. What can university-specific needs be in assessment, in order to address best the university-specific characteristics?

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
3rd of September 2014**

0.b Workshop schedule	
16:00	Welcome Introduction to objectives of the workshop and to the research – power point presentation (~15 min) <i>until slide 22</i> <i>(Not to forget to announce: People can interrupt and ask questions)</i> Clarifying questions Instructions for the discussions
16:20 <i>(16:25)</i>	Division into groups of 4-5 people (6 groups), Before going into groups, participants choose object from the natural world (stones, woods, etc.) from the table First discussion: Holistic approaches in assessment, and to what extent does the model appear to you following a holistic approach? ~15 min.
16:40 <i>(16:45)</i>	Plenum – short reporting back to all ~5-10. min.
16:50 <i>(17:07)</i>	Introduction to second group discussion: <i>Slide 24-26</i> Division into groups of 3 people (~7 groups) 2 nd discussion: Themes of the model ... ~20 min.
17:10 <i>(17:20)</i>	Plenum – reporting back and final suggestions 10 min.
17:20	Closing the workshop – slide 28 and 29 distributing thank you-gifts and individual questionnaire
17:30	End of workshop

Note: Timings in red refer to the real time when running the workshop

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
3rd of September 2014**

1. Overview of workshop sample

N=26 (16 Feminine; 10 Masculine)

- 10 different nationalities (largest groups: 10 participants from UK, 4 from Germany, 3 from USA)
- 21 different universities represented

Table 1 shows this overview, organised by nationality, university and gender.

Table 1: Workshop sample – overview of nationality, university and gender

Australian	1	German	4
Macquarie University, Australia	1	Nottingham Trent University, UK	1
f	1	f	1
Brazilian	2	Technical University (TU) Berlin, Germany	2
University of Passo Fundo, SP, Brazil	2	f	1
f	1	m	1
m	1	University of Coimbra, Portugal	1
British	10	m	1
Anglia Ruskin University, UK	1	Greek	1
f	1	Democritus University of Thrace, Greece	1
Canterbury University, UK	1	m	1
m	1	Mexican	1
Manchester Metropolitan University, UK	2	Universidad Autónoma de Mexico, Mexico	1
f	1	m	1
m	1	US-American	3
Preston University, UK	1	Allegheny College, USA	2
f	1	f	1
Staffordshire University, UK	1	m	1
f	1	University of Northern Iowa, USA	1
University of Beds, UK	1	f	1
f	1	Lithuanian	1
University of Manchester, UK	1	Kaunas University of Technology	1
f	1	m	1
University of the West of England, UK	2		
f	1		
m	1		
Grand Total			26

2. Analysis from Group Work I

N= 7 (7 groups à 3 or 4 persons)

Tasks for writing on cards:

- 2.1. Which are the first 3 words that come to your mind?
- 2.2. Finish the sentence "The Earth means to me".

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
3rd of September 2014**

Table 2 resumes task 2.1; Table 3 resumes task 2.2. After each table, a brief reflection / list of insights is given, that I retrieved from the analysis. Table 2: List of the first three words participants have written on cards, after being introduced to the ECPAS-model

Table 2: Statement on cards - First three words by each participant

Holistic	Interactive	Iterative
Integration	Transformation	Accountability
Holistic	Connecting	Journey
Jargon	Elaborate	Integrated
Confusing (but not a bad thing)	Natural	Fluid
Complex	Encompassing	Monitors a journey
Inspiration	Curiosity	Collaboration
Ethics	Values	Skills
Never-ending	Understandings	Learning
Complex	Relevant	Useful
Complicated	-	-
Boring	Too warm	Too crowded room
Legitimizing	Leadership	Policy
Dynamic	Harmonious	Progressive
Approachable	Relatable	Novel
Beauty	Respect	Engagement
Need for more inclusion	Transformative learning	Importance of being here (presence)
Disconnected	Outside	Trees
Comprehensive	Environment	Society
Indicators	Linkages	Need to define what the output, outcome and impact (?) will be
Environment	World	Tuning (?)
Participation	Commitment	Responsibility
Interconnectedness	Non-?	Diversity
Learning	Changing	Impact
Adaptive	Colour	Animated
Holistic	Engagement	Endurance

Insights:

- mainly positive associations (except for one participant who felt bored and uncomfortable in a too crowded room)
- *Holistic, learning, complex and engagement / participation* were stated by several participants (highlighted in green)

(B 5 continued)

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- Most participants have written down descriptive (highlighted in yellow and purple (holistic), which are mostly positivist, e.g. relevant, useful, harmonious, comprehensive.

Table 3: Collection of statements about what the Earth means to each participant

The Earth means to me home (<i>stated like this by 4 persons</i>)
The earth means to me our home.
The Earth means to me peace and home.
The Earth means to me the only home we have.
The Earth means to me energy, home, a mother.
The Earth means to me the central part, where all things are happening; everything is connected.
The Earth means to me everything I know and love.
The Earth means to me to be happy and safe.
The Earth means to me our children's future.
The Earth means to me a place to live and respect.
The Earth means to me the space in which we live and act.
I love nature because there is space, fresh air, freedom.
The Earth means to me life.
The Earth means to me everything. I want to dedicate my career and life in general to conserving it.
The Earth means to me where my feet stand, from where I reach up to the sky.
The Earth means to me everything. I cannot imagine education at the moment without the purpose of solving some sustainability challenges.
The Earth means to me the ground beneath my feet.
The Earth means to me the basis of all.
The Earth means to me the only one I have.
The Earth means to me everything. I can't think to be without it.
The Earth means to me a living interconnected entity.
The Earth means to me a physical resource upon which life depends.
The Earth means to me finding peace of mind.

Insights:

- most participants feel a deep respect for the Earth
- most participants attribute a high significance and positive values to the Earth (e.g. home, stated by 8 persons in total)
- most participants liked this exercise; nobody refused to participate
- several participants reported back afterwards, orally and by e-mail, that this exercise was thought-provoking and created interesting discussions. Some people kept connected with their groups during the whole conference.

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
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2.4. First group discussion about:

To what extent does the model follow a holistic approach in sustainability assessment?

Answers (7 groups in total):

Table 4: Answers of first group discussion (Group Work I)

Gr.	Answer
1	<ul style="list-style-type: none">• Model is hard to grasp as an outsider• The model makes sense to persons who developed the model, but not readily accessible without a lot of description• Devil is in the details: Exactly what you choose to measure matters• We (?) with how to engage personal biases. This conversation got very philosophical.• Advantage of using a spiral is the idea that you never arrive at an endpoint.
2	<ul style="list-style-type: none">• Depends on defined indicators (does it cover social, economic or environmental). They could be environmental focused; need for more detail• Confused about the arrows• Earth suggests environment rather than social and economic (<i>world</i> would be a better term?)• How do things link together?• Quantitative and qualitative KPIS• How have people engaged?
3	<ul style="list-style-type: none">• Need to carefully distinguish output from outcome and outcome from impact• Having Earth at the centre helps to keep the focus on the limits of the planet. However, this may distort the view of sustainability- is articulation of social and economic factors needed?• Futurity and intergenerational considerations - more needed?• Could the model be applied outside of Higher Education?• Clarity may be needed around that the model seeks to represent - is it best practice?• Baseline?• Are all indicators equally weighted?• Articulation of desirable levels / positions for each indicator? Is there an ideal end point?• At what point is success achieved?• Who are the stakeholders / Participants?

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
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Gr	Answers (continued)
4	<ul style="list-style-type: none">• The model seems to us widely applicable + thus holistic• We think that it is a softer way of measuring impact / progress which avoids being too simplistic. However, this opens it up to arbitrariness and (?) that is subjective.• Maybe the diagram could have 'add ons' so that particular strengths (?) could be developed according to whoever is using it.• What is the difference between output and outcome?• Does the model allow for unintended consequences?• To what extent does the model reflect the inter-connectedness of ecological and social factors? Where is the personal responsibility of the individual?
5	<ul style="list-style-type: none">• no answer on sheet, remarks around the figure
6	<ul style="list-style-type: none">• Flows of processes represent flow whereas indicator graphics are not complementary shapes - perhaps represent as feeding into the spiral
7	<ul style="list-style-type: none">• Measuring may reduce issues. Capital? Reducing nature to...• Earth means to us love, peace, wisdom, all I know, central part, where all things are happening; everything is connected.• Participation may need a creative side. It may close things down, it may need to open up, it could be bringing (it) to a wider audience the results - discussions, etc. - if more people can see it and maybe comment online.• The model may need to be tridimensional or multi-dimensional.• Different stakeholder would co-create and may change the model, the model may need to be adaptive.• What would be the form of the outcomes?• Co-defining each output indicators, outcome indicators, structure / context indicators and impact indicators.

Insights:

- Difficult to analyse the comments, because the main question whether the model appears holistic or not is not explicitly answered, except of Group 4;
- The groups have struggled first with understanding the model better and needed more information on possible indicators;
- The flow of the group discussion is not possible to re-construct very well from these comments; interpretation possibilities are limited;
- Groups give more general feedback on the graphical organisation of the model; more written explanation on the group sheet might have been helpful;
- The concept of Earth-connectedness needs more explanation, as it was sometimes connected to the environmental side of sustainability, but is instead meant holistically and actually with a focus on the social aspects of participation and learning
- More information to add on the model:
 - o A legend with explanations for outputs / outcomes / impacts
 - o An explanation on the arrows

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
3rd of September 2014**

3. Analysis of Group Work II

N= 8 (8 groups à 3 or 4 persons)

Question 1 – To what extent do you agree that these themes fit in the overall topic “Assessing participatory approaches within sustainability in higher education”?

In figure 1, the groups’ answers to the question above are resumed:

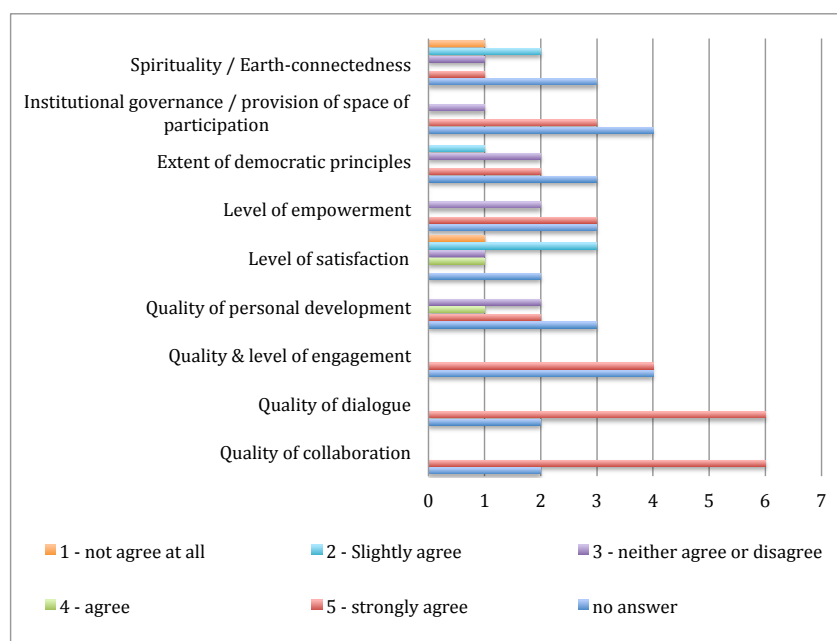


Figure 1: Fitting of themes into the overall topic ‘Assessing participatory approaches within sustainability initiatives in higher education’

Insights from quantitative analysis:

- *Quality of collaboration* and of *dialogue* were the themes the groups the agreed strongly upon to fit in the overall topic (6 groups stated that they strongly agree with these themes), followed by ‘*Quality of engagement*’ (four groups stated that they strongly agree with this theme);
- Regarding no answers, four groups did not provide an answer to the theme ‘*institutional governance*’ and three groups did not provide an answer to the theme ‘*Spirituality / Earth-connectedness*’, however some groups strongly agreed that both themes fit in the overall topic (three groups for institutional governance, one group for spirituality / Earth-connectedness);
- Only in two cases, two groups classified themes not to fit in the overall topic: *spirituality / Earth-connectedness* and *level of satisfaction*.

(B 5 continued)

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- Overall, *level of satisfaction* was the theme less agreed with (4 groups only slightly agreed)

Additional comments provided by groups

The groups provided general and theme-specific comments on the above question (Table 4 and 5):

Table 5: Participants general comments on the question

General comments:	
-	Themes are interconnected
-	Quality of collaboration + dialogue perhaps collapsed
-	GII-5 could not be finished completely
-	Method for applying the model?
-	We think that there are too many indicators and ambiguously expressed
-	Effectiveness?
-	Mixed-methods?
-	Need to be clear about definitions of participation + collaboration
-	Is there a theme that measures progress toward the intended outcome?
	These themes measure participant outcomes + satisfaction
-	All process based

Table 6: Participants' comments on specific themes

Theme	Comment
Quality of collaboration	- Would be good to use communication instead of dialogue - What is the definition of quality?
Quality of dialogue	- What is the definition of quality?
Quality & level of engagement	- What is the definition of quality? - need to think about quality & level of participation we would like to achieve
Quality of personal development	- What is the definition of quality?
Level of satisfaction	(two persons in the group voted for '2', two for '4')
Level of empowerment	-
Extent of democratic principles	- we need more info on this one
Institutional governance / provision of space of participation	- or 10 - very important, doesn't happen often enough
Spirituality / Earth-connectedness	- very important, but not everyone will like these words

Insights:

- More info / examples would have been helpful to illustrate better which could be indicators in each theme and how this could be translated to a concrete practical example
- Groups perceived that there is overlapping between themes, and that they focus on outcomes and satisfaction

9

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
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- Practical suggestion, like substituting 'dialogue' by 'communication' and to join it with 'collaboration' can be helpful for the next steps
- The comment about the difficult wording for spirituality / Earth-connectedness is mirrored in this workshop sample: some persons do not like the wording, however see some or even high importance in including it
- I am surprised by the answers about the level of satisfaction, as a significant number of participants apparently did not consider it to fit very well in the overall topic.

Question 2 – To what extent do you agree that these themes are relevant for the overall assessment of participatory approaches within sustainability initiatives?

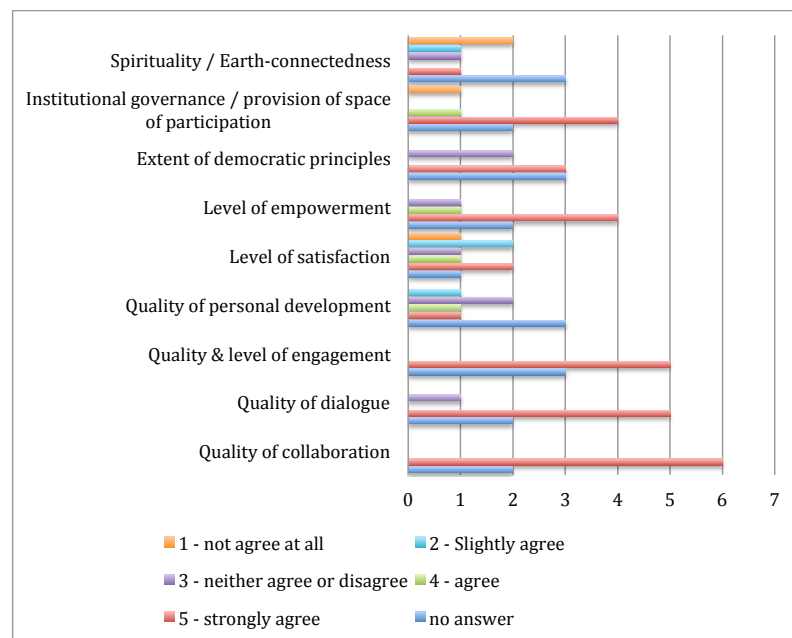


Figure 2: Relevance of themes in the overall assessment process of participatory approaches in sustainability initiatives

Insights:

- *Quality of collaboration* was the theme where participants most strongly agreed on its relevance in the overall assessment process (six groups), followed by *quality of dialogue* and *quality and level of engagement* (five groups each), and then *level of empowerment* and *institutional governance* (four groups each).
- Two groups did not consider *spirituality / Earth-connectedness* as relevant in this kind of assessment process. *Level of satisfaction* and *institutional governance* were also considered as not relevant (each theme by one

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
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group respectively). However, other groups considered these themes as very relevant, and these cases demonstrate the ambiguity and differences in perceptions.

- The analysis does not allow to re-construct the group discussions, but additional comments regarding discarding or adding themes offer further insights.

Question 3 - Themes to discard

Two groups suggested to discard spirituality / Earth-connectedness; four other groups provided further constructive comments (Table 6):

Table 7 Themes to discard

Gr.	Theme to discard	Comment
1		Maybe satisfaction because there need to be a level of dissatisfaction. Maybe we would discard some that have a lower number; words may be reviewed to make it clearer what it suggests.
2	Spirituality / Earth-connectedness	no comment
3		<ul style="list-style-type: none">• Split earth-connectedness from spirituality; spirituality will scare / turn off certain people (academics)• There is a hierarchy within this list: if the quality of the first themes is high, more or less the other themes will be positive.
4	-	-
5	-	-
6		Not discard, but re-think (in particular quality and level). Who decides on quality?
7	Spirituality / Earth-connectedness	-
8	-	To what extend is spirituality / earth-connectedness necessary? But can it be included in personal development?

Insights:

- Themes could be collapsed / grouped and shortened, evtl. new terms (e.g. communication instead of dialogue; maintaining only 'Earth-connectedness' or something similar);
- Comment about spirituality 'scaring / turning off academics' is mirrored by the participants in this workshop.

Themes to add

Four groups made suggestions to add themes (Table 7):

(B 5 continued)

**Summary Workshop at WSSD-U 2014, Manchester, UK
3rd of September 2014**

Table 8: Themes to add

Gr.	Theme to discard	Comment
1	-	-
2	Effort indicator Outcome of the project	Is it worth doing it?
3	Sentiment	or the importance / valorisation of participation in a collective project
4	Quality of questioning Quality of critique	-
5	-	-
6		Effectiveness (mixed methods) purpose?
7	Networking	Creating long lasting networks with peers
8	-	-

Insights:

- Not all suggestions are clear
- Some suggestions are already included in the present model, but might have not been clear to the participants
- Networking could be useful theme to add

Additional comment

Only one group provided an additional comment:

- How are these themes re-sorted: self-reporting, questionnaire, facilitators?

Overall conclusion:

- This summary needs to be discussed with supervisors in order to find the most suitable way how to use this analysis for the further steps of the research.
- The individual questionnaire is also helpful to complete this analysis.

B 6: Individual questionnaire distributed at Copernicus Alliance Conference and ERSCP 2014 (October 2014)

Project INDICARE – care for planet, people and learning
The ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)
Feedback on current ideas – individual questionnaire

ECPAS at a glance (as of October 2014)

Purpose

The purpose of this model is to help in **designing** and **assessing** participatory approaches in sustainability initiatives in universities. It can help to complement existing sustainability reporting practices or be used alone. The focus lies on assessing the **quality of the process** and the **opportunities of learning, sharing and new knowledge creation** that can emerge through the participatory process. It is not competition-oriented and would therefore not serve ranking purposes.

For who?

The model is for all relevant groups that are part of the academic community in the respective university, and within a participatory process it encourages the best representative distribution possible of:

- Students;
- teaching staff;
- non-teaching staff;
- relevant external stakeholders¹

¹e.g. from the municipality, local community groups, NGO's, enterprises, etc.

Format

The **spiral** was chosen, because it represents a format frequent in nature and suggests dynamic and constant change. It places the earth at the center, as the purpose of sustainability is to sustain life on earth. With an **earth-centeredness**, it aims to encourage a **mutual-oriented process**:

- (i) an **inward-directed** process strengthening **personal reflection about values and worldviews**, and
- (ii) an **outward-directed** process strengthening **action for sustainability**.

Both directions can envision a (re-)connection to the earth, respecting and learning from its complex systems as a source of inspiration.

Possible **themes** (on the right side of the figure) give suggestions what thematic areas could be assessed in a participatory approach (e.g. level of empowerment, learning & personal development, etc.). Themes can/should be adjusted according the specific needs and preferences of the participants and are to be understood as facultative. It is encouraged to give preference to system thinking and to demonstrate the interconnectedness between themes.

The tool is overall process-based, but as participation is very complex and evolves over time, several types of indicators were included, following a division usually used in development and/or educational project contexts. Adapted to the higher education context we refer with these types of indicators (Table 1) to:

PhD Research project from Antje Disterheft

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany | Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011; antje.disterheft@uc.pt; distributed at Copernicus-Alliance Conference, 29th of October 2014, Prague, Czech Republic

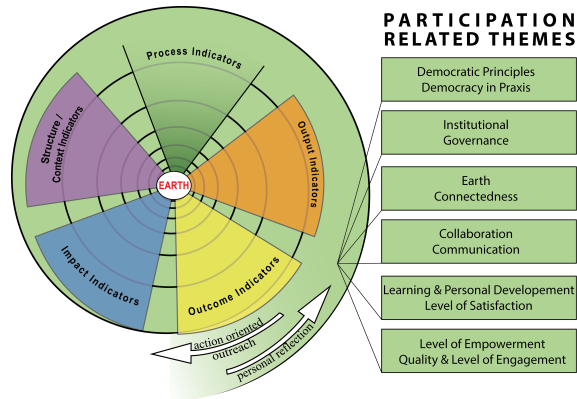


Figure 1: Eco-centered participation assessment spiral (as of Oct'14)

(B 6 continued)

Project INDICARE – care for planet, people and learning
The ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)
Feedback on current ideas – individual questionnaire

Table 1: Legend for types of indicators (based on UNDP, 2009; Disterheft et al., 2014, ESD inds, 2011)

Type of indicator	Explanation
Structure/context indicators	Refers to the institutional structure and context where the participatory process takes place; e.g. democratic governance structure of internal organs; existing policies and mission statements on sustainability and ethics, etc.
Process indicators	Refer to the quality of the process itself, including themes like communication, stimulation for personal reflection or the level of satisfaction of participants.
Output indicators	Refer to concrete products of the process, e.g. a guidebook, action plan / strategy, new founded groups or networks, etc.
Outcome indicators	Refer to the beneficial short-term effects (of the initiative) in relation to the overall objectives, e.g. change of previous patterns, new ways of doing things
Impact indicators	Refer to the long-term or indirect effects of the outcomes, e.g. double or triple loop learning, empowerment and new cycles of participation

How to apply?

This point is not clearly defined yet, but following the inspiration of the ESD inds-project, a mix of quantitative and qualitative measurement methods, would be favoured.

References:

- UNDP. (2009). *Handbook on Planning, Monitoring and Evaluating for Development Results*
Retrieved from <http://web.undp.org/evaluation/handbook/resources.html>, and
Disterheft, Antje, Caeiro, Sandra, Azeiteiro, Ulisses M., & Leal Filho, Walter. (2014).
Sustainable universities – a study of critical success factors for participatory approaches. *Journal of Cleaner Production*. doi:
<http://dx.doi.org/10.1016/j.jclepro.2014.01.030>
ESD inds. (2011). *The Development of Indicators and Assessment Tools for CSO projects Promoting Values-based Education for Sustainable Development*. Retrieved 15-04-2014, from <http://www.esdinds.eu>

PhD Research project from Antje Disterheft

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany | Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011; antje.disterheft@uc.pt; distributed at Copernicus-Alliance Conference 09th of October 2014, Berlin, Germany

(B 6 continued)

Project INDICARE – care for planet, people and learning
The ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)
Feedback on current ideas – individual questionnaire

About the model	How clear is the purpose of the model to you (1=not clear at all; 5=very clear)					How clear is the graphical structure of the model? (1=not clear at all; 5=very clear)					To what extent do you think the model could be helpful for assessing participatory approaches within sustainability implementation in higher education? (1=not helpful at all; 5=very helpful)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
On a scale from 1 to 5, please indicate															

About the themes	To what extent do you agree that these themes fit in the overall topic "Assessing participatory approaches within sustainability initiatives in higher education"? (1=do not agree at all; 5=strongly agree)					To what extent do you agree that these themes are relevant for the overall assessment of participatory approaches within sustainability initiatives? (1=do not agree at all; 5=strongly agree)				
On a scale from 1 to 5, please indicate	1	2	3	4	5	1	2	3	4	5
Themes										
Democratic principles / Democracy in praxis										
Institutional governance										
Earth-connectedness										
Collaboration										
Communication										
Quality & level of engagement										

(B 6 continued)

Centro de Ecología Funcional



Instituto für Angewandte Wissenschaften Hamburg



Project INDICARE – care for planet, people and prosperity
The ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)
Feedback on current ideas – individual questionnaire

About the types of indicators		To what extent do you agree that these types of indicators fit in the overall topic? *Assessing participatory approaches within sustainability initiatives in higher education? (1=do not agree at all; 5=strongly agree)					To what extent do you agree that these types of indicators are relevant for the overall assessment of participatory approaches within sustainability initiatives? (1=do not agree at all; 5=strongly agree)				
Type of indicator	Explanation	1	2	3	4	5	1	2	3	4	5
Structure/context Indicators	Refers to the institutional structure and context where the participatory process takes place; e.g. democratic governance structure of internal organs; existing policies and mission statements on sustainability and ethics, etc.										
Process Indicators	Refer to the quality of the process itself, including themes like communication, stimulation for personal reflection or the level of satisfaction of participants.										
Output indicators	Refer to concrete products of the process, e.g. a guidebook, action plan / strategy, new founded groups or networks, etc.										
Outcome indicators	Refer to the beneficial short-term effects (of the initiative) in relation to the overall objectives, e.g. change of previous patterns, new ways of doing.										
Impact indicators	Refer to the long-term or indirect effects of the outcomes, e.g. double or triple loop learning, empowerment and new cycles of participation										

Further comments (optional):

For internal statistic purpose only
Please tick/fill in what applies:

Male Female 20-29 years 30-39 years 40-49 years 50-59 years 60-69 years older than 70 years

Nationality: _____ (OPTIONAL) I am available for giving further (online) feedback: (e-mail) _____

NOTE: This questionnaire can be returned at the end of the session or during the conference dinner. If you cannot fill in the questionnaire at the moment, I would appreciate if you could send me a scanned version by e-mail to antje.disterhef@uc.pt. **THANK YOU VERY MUCH FOR YOUR SUPPORT!**

PhD Research project from Antje Disterhef
 Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany | Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011; antje.disterhef@uc.pt; distributed at Copernicus-Alliance Conference, Octth of October 2014, Prague, Czech Republic

B 7: Materials distributed at informal feedback round at Leuphana University, April 2015

Measuring and caring about participation in higher education's sustainability assessment

INDICARE at a glance

Purpose

The purpose of this model is to help in **designing** and **assessing** participatory approaches in sustainability initiatives in universities. It can help to complement existing sustainability reporting practices or be used alone. The focus lies on assessing the **quality of the process** and the **opportunities of learning, sharing and new knowledge creation** that can emerge through the participatory process. It is not competition-oriented and would therefore not serve ranking purposes.

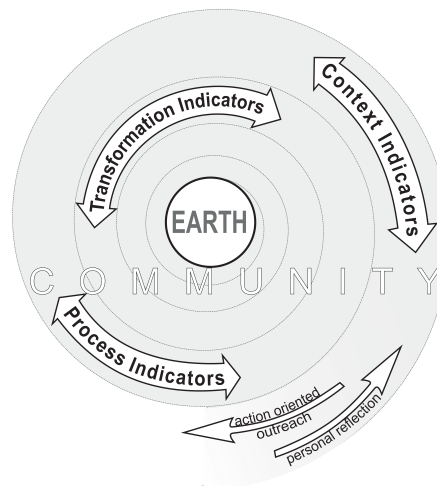


Figure 1: The INDICARE-model (as of April 2015)

For who?

The model is for all relevant groups that are part of the academic community in the respective university, and within a participatory process it encourages the best representative distribution possible of:

- Students;
- non-teaching staff;
- teaching staff;
- relevant external stakeholders¹

¹e.g. from the municipality, local community groups, NGO's, enterprises, etc.

Format

The **spiral** was chosen, because it represents a format frequent in nature and suggests dynamic and constant change. It places the earth at the center, as the purpose of sustainability is to sustain life on earth. With an **earth-centeredness**, it aims to encourage a **mutual-oriented process**:

- an **inward-directed** process strengthening **personal reflection about values and worldviews**, and
- an **outward-directed** process strengthening **action for sustainability**.

Both directions can envision a (re-)connection to the earth, respecting and learning from its complex systems as a source of inspiration.

The tool is overall process-based, but as participation is very complex and evolves over time, several types of indicators were included, adapted from development and/or educational project contexts (Table 1):

1

PhD Research project from Antje Disterheft

Universidade Aberta, Lisbon, Portugal | Centre for Functional Ecology, University of Coimbra, Portugal | HAW – University of Applied Sciences Hamburg, Germany | Funded by the Portuguese foundation for Science and Technology (FCT), grant SFRH/BD/77735/2011; antje.disterheft@uc.pt; distributed at informal feedback round at Leuphana University, April 2015

(B 7 continued)



Centro de Ecologia Funcional

Project INDICARE – care for planet, people and learning
The ECO-CENTERED PARTICIPATION ASSESSMENT SPIRAL (ECPAS)
Feedback on current ideas – individual questionnaire

Table 1: Types of indicators (adapted from UNDP, 2009; Disterheft et al., 2014, ESD inds, 2011)

Type of indicator	Explanation
Context indicators	Refers to the institutional context where the participatory process takes place; e.g. democratic governance structure of internal organs; existing policies and mission statements on sustainability and ethics, ESD training for staff, community cohesion, aesthetical conditions of the built environment, etc.
Process indicators	Refer to the quality of the process itself, including themes like quality of communication and democratic principles, collaboration and human-nature-relationship. The indicators focus on the space provided for stimulation of personal reflection and the quality of interaction.
Transformation indicators	Refer to the transformational aspects – the changes – that result or emerge from the process.

How to apply?

This point is not clearly defined yet, but following the inspiration of the ESD inds-project, a mix of quantitative and qualitative measurement methods, would be favoured, with assessment exercises that could be done individually or on group level. Ideas how to scale it up on institutional level are welcome ☺.

References:

- UNDP. (2009). *Handbook on Planning, Monitoring and Evaluating for Development Results*. Retrieved from <http://web.undp.org/evaluation/handbook/resources.html>, and
- Disterheft, Antje, Caeiro, Sandra, Azeiteiro, Ulisses M., & Leal Filho, Walter. (2014). *Sustainable universities – a study of critical success factors for participatory approaches*. *Journal of Cleaner Production*. doi: <http://dx.doi.org/10.1016/j.jclepro.2014.01.030>
- ESD inds. (2011). *The Development of Indicators and Assessment Tools for CSO projects Promoting Values-based Education for Sustainable Development*. Retrieved 15-04-2014, from <http://www.esdinds.eu>

B 8: Selected indicators as of April 2015 discussed at Leuphana University

Appendix – Additional information on selected indicators

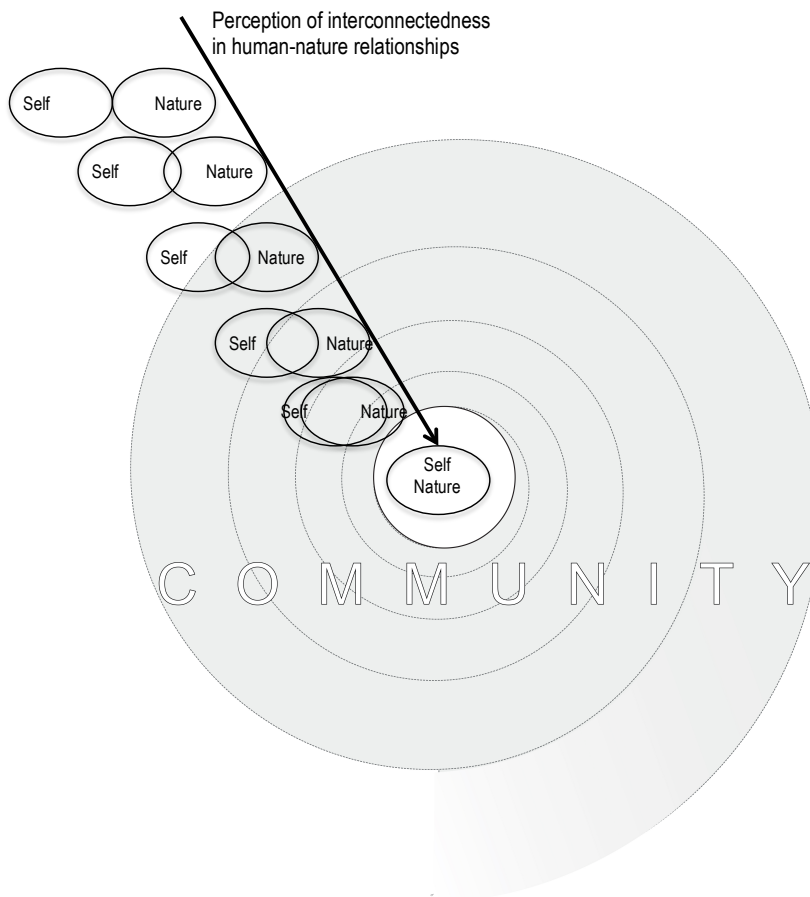
Human-nature relationship/ Interconnectedness of systems/ Biophilic experiences / connectedness with nature

Details for P2.2 – Interconnectedness-indicator:

⇒ *The closer the participant positions herself/himself towards or into the center of the spiral, the more she/he identifies with the perception of the interconnectedness of the self and nature*

Possible measurement:

- (i) Individual mapping on prepared sheet, or
- (ii) group mapping (prepared sheet on a wall where participants can stick gluing points)



Confidential – please do not distribute; by antje.disterheft@uc.pt

1

Appendix – Additional information on selected indicators

Communication & democratic principles

Details for P3.1 – Ideal-Discourse-indicator (*gives insights about the quality of the communication*):

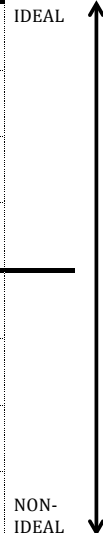
Mapping according to Mezirow’s ideal discourse

⇒ The closer to the ideal discourse, the higher the quality of communication (Mezirow, 1997)

Possible measurement:

- (i) Individual mapping on prepared sheet, or
- (ii) group mapping (prepared sheet on a wall where participants can stick gluing points)

Subjectively felt distance / closeness towards the ideal discourse	Participants are						
	Allowed full access to information	Free from coercion	Allowed equal opportunity to assume various roles of the discourse	Encouraged to become critically reflective of assumptions	Empathic and open to other perspectives	Willing to listen and to search for common ground	Willing to make a tentative best judgment to take action
+4 Met the ideal							
+3 Very close to ideal							
+2 Close to ideal							
+1 In direction towards ideal, but still distant							
-1 Opposite towards ideal, but within reach to change direction							
-2 Far away from ideal							
-3 Very far away from ideal							
-4 Completely non-ideal							



(B 8 continued)

Appendix – Additional information on selected indicators

Shift of perception

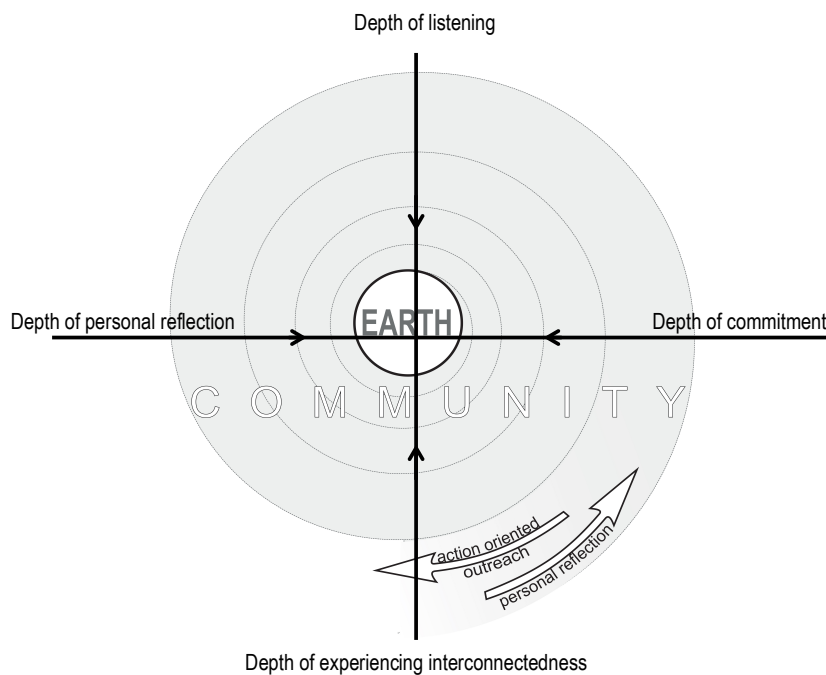
Details for T1 – Transformation compass-indicator *(gives insights about the strength of interplay between personal reflection and action-oriented outreach):*

⇒ The closer the participant positions her/himself on each one of the four arrows towards the center, the deeper she/he has experienced the space in the process provided for reflection, listening, interconnection and commitment. It is assumed that the deeper the personal experience is the stronger the commitment to participate in further actions for sustainability.

Possible measurement:

- (i) Individual mapping on prepared sheet, or
- (ii) group mapping (prepared sheet on a wall where participants can stick gluing points)

Each participant is requested to mark her/his position on each one of the four arrows



B 9: Invitation to prototype workshop on Dragon Dreaming



(Sustainable) universities go Dragon Dreaming –
Learning for transition

Workshop introdutório ao método de desenho de projectos Dragon Dreaming

Sonhar e realizar projectos

oferecido por Antje Disterheft, doutoranda em Sustentabilidade Social

Local: Universidade Aberta,
Lisboa (metro RATO)
Sala de Atos (1º andar)

Quando: 3ª feira, 20/10/2015
17:00 – 19:00h

Custos: gratuito

Inscrições e mais informação:
antje.disterheft@gmail.com



www.dragondreaming.org

B 10: Impression from Dragon Dreaming workshop at Universidade Aberta (20 Oct 2015)



B 11: Abstract for Dragon Dreaming workshop at the Global Cleaner Production Conference 2015

(Sustainable) universities go Dragon Dreaming – Learning for transition

Many of us dream of another university in which sustainability is not just part of a marketing strategy, but a lived vision to teach and learn together for building a more inclusive, just and peaceful world where human and nature systems are respected equally and understood as being interconnected. Many share the dream of rethinking education (Orr, 2004) that would encourage to “take us into the depth of things” (Schumacher, 1974, in Sterling, 2010). In this line, as the Education for Sustainability / Education for Sustainable Development movement shows, many of us search for and experiment with new ways of learning and new forms of collaboration. Yet, probably many also feel the resistances and heavy structures of the higher education system, and the continuous efforts appear like battles that arise when striving for change.

Dragon Dreaming is a method of learning and of developing projects differently, following the motto *‘If it is not playful, it is not sustainable.’*

What is Dragon Dreaming?

Dragon Dreaming is a project management method with a truly holistic approach that fosters transformative learning. While the method is based on indigenous wisdom from the Aborigines, it integrates ideas from participatory democracy and deep ecology as well as from complex system theory.

What are Dragon Dreaming’s objectives?

Dragon Dreaming has three, equally important objectives: Service to the Earth, Community Building and Personal Growth. Dragon dreaming is used in all forms of organisations and enterprises, but also by everyday individuals who wish to discover a pathway of making a difference in their own lives as well as in the lives of others. In this workshop, we will make linkages to the university context and explore how Dragon Dreaming can be applied in academia.

This workshop’s objectives are:

- to introduce the method Dragon Dreaming and explore practically some of its elements;
- to show and experience how this method can help fostering transformative learning as well as creating happier processes and outcomes in sustainability initiatives of different types in the university context;
- to provide the participants with ideas how they could use DD in their work;
- to connect with others and have fun together;
- to develop new dreams together.

What will this 2h workshop offer?

- An overview of the method in general and it’s philosophy;
- A practical exercise on charismatic communication - we all have dreams but how can we better speak about (and live) our dreams?;
- Getting to know *‘Pinakarri’* – a simple tool for deep listening and improving communication;

(B 11 continued)

- Introduction to the project wheel and exploring the phases 'dreaming' – 'planning' – 'doing' – 'celebrating';
- Brief outlook on further elements like the '*Karabirrdt*' - a different type of project plan that is inspired by a game board – and why budgeting does not need to be boring.

The workshop design is highly dynamic and aims to engage both sides of our brains. Everyone interested is invited to be open for surprises and new insights.

Feel free to check www.dragondreaming.org and download the free e-booklet for further information.

Ideal length: 2h (in 1h only a brief overview of the method could be given, the practical exercises would need to be excluded)

Why this workshop at the Global Cleaner Production Conference?

This workshop is the result of a dream that came up during my PhD thesis on participatory processes in higher educations' sustainability initiatives. Having been fascinated by the method, I attended a three-days introduction workshop on Dragon Dreaming where the idea for this workshop went through a complete Dragon-Dreaming-cycle. Since then, I have been keeping in contact with several professional trainers and continue to learn and practice this method.

I wish to share some of the insights that I learned and connect with you as I believe that it can be of value on our transition journey to equitable post-carbon societies, and in particular for experimenting new ways in sustainability implementation at universities.

References

- Orr, David W. (2004). *Earth in mind: on Education, Environment and the Human Prospect* (10th anniversary ed.). Washington: Island Press.
- Sterling, S. (2010). Transformative Learning and Sustainability: sketching the conceptual ground. *Learning and Teaching in Higher Education*(5), 17-33.

B 12: Impressions from Dragon Dreaming workshop at GPC 2015

